

Responses to the IAC Questionnaire

Note: All questionnaire responses received during the Committee's writing and analysis period are given below. They have been formatted for consistency and edited only to remove identifiers, including specific roles held in the various assessments. Where identifiers could not be removed without significantly altering the text, permission to print the original response was obtained from the author.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Contributing Author, Lead Author, Convening Lead Author, participant in a scoping meeting and a special workshop. My experience is limited to Working Group 1.

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

It is perhaps unavoidable that the position of IPCC chairperson is to some degree political. Since the assessment report is written by three large independent working groups, it is however absolutely crucial that only outstanding scientists with a high standing in the community are selected as working group chairpersons. For the WG1, in the past this has been always the case. Among the WG1 vice chairs there also have been some very good scientists.

2c. Selection of lead authors

I have no experience with the selection process, but in the past the result has been that the majority of lead authors consisted of excellent scientists who are respected in the community and were committed to their task. It is most important that this is not changed in the future.

2d. Writing of working group reports

Participating in the writing has been an interesting experience, quite different from writing in other contexts. On the chapter level, it is inevitable that a text written by 10-15 lead authors (supported by a number of contributing authors) reflects to some degree their dominant views and expertise. This is not much of a problem as long as the authors are chosen such that competence and a proper balance of expertise are achieved. Further broadening of the views results from the interactions within the full Working Group and from the review process.

2e. Review processes

I do not know any other scientific report that is more thoroughly reviewed than the IPCC

assessments. A response has to be given to any and all comments, and review editors monitor that these responses are appropriate and substantial.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

From the viewpoint of an author, the adoption process which requires unanimous word-by-word agreement by more than hundred governments is a most painful (and very inefficient) procedure. Also, it has led to a certain degradation of the Summary for Policy Makers (fuzzy language, even parts missing due to time constraints of the plenary sessions).

3. What is your opinion on the way in which the full range of scientific views is handled?

At all IPCC meetings which I have attended, there has been a fully open scientific discussion. On controversial subjects where differing views exist in community (and the published literature), lead authors have been advised to describe all views in the report even if they adopt one particular view.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The IPCC rules say that any substantial statement in the report should be backed up by a reference. The tendency of most author groups probably has been to use extensive referencing, i.e. to reference more publications than would have been absolutely necessary. Obviously there is a certain pressure in this direction from author teams and also from reviewers, and a considerable fraction of the (welcome) review comments are by scientists who argue that some of their papers are most relevant and hence should be referenced.

Non-peer-reviewed literature should obviously be minimized but cannot be totally avoided. The reason is that often important data collections are published in this way. Such collections may e.g. be directly used for plotting data in the assessment report. As long as such collections are accompanied by an article in a peer-reviewed journal, their use is not problematic.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Overall the handling and description of uncertainty has been most careful. There have been several reports on this issue, and it has been assured that in all parts of the report the same characterization is applied.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

These are two different issues. The IPCC does not (and should not) do any research, and hence is

not directly involved in issues of data quality control. Rather, the IPCC assesses published research that is based on data. Any assessment of data quality therefore has to be based on the scientific literature, and inevitably to some degree also on the judgment of lead authors. I do not see how this aspect could be much improved.

As regarding errors in the report, a main function of the review process is to eliminate errors. In my experience this has worked generally well. However, as seen after AR4, errors may remain even in the final version (which is not really surprising in a document of some 1000 pages length written by humans). A procedure how to cope with such errors is obviously lacking and should urgently be installed.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Since there have been allegations that the research program of the current IPCC chair could potentially cause a conflict of interest with statements in parts of the assessment report, one might consider to establish a conflict-of-interest policy for the senior personnel participating in IPCC.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Contributing author, Lead Author, Coordinating Lead Author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

I've never been involved in identifying "policy questions". My role as an author has been to assess the science, not look at policy, and the IPCC assessments MUST be about science, not "policy questions"

2b. Election of Bureau, including Working Group chairs

I'm not aware of how this works, and it has not (to date) affected work I've done as an author in WG1.

2c. Selection of lead authors

I'm not clear how this actually happens, but in my experience the authors I've worked with have been very well chosen

2d. Writing of working group reports

The writing tasks are handled by the chapter authors, and this has always been the most fruitful part of the process from my point of view.

2e. Review processes

There is a serious problem with the present review process in my view that needs to be fixed. Early on a two stage review was instituted (technical review and government review), and I was never quite sure why, but it never was too onerous until the AR4. In the AR4, my chapter had nearly 1400 comments for each stage of the review. For the technical review (first stage review) our chapter had many place holders for studies somewhere in the review process. But the chapter and conclusions were essentially complete. After having to respond by hand to each of nearly 1400 comments, we made appropriate revisions to the text, and with finalizing, the chapter was essentially finished. But then we had the government review, and got another 1400 comments. The vast majority were non-substantive, and it became a very tedious process to go through all those comments, many similar to the first round that we already responded to. The AR5 looks to be even worse when it comes to review comments. I expect at least a doubling of comments for each round of review. This places an extraordinary tax on the lead authors for no real purpose. I propose having only one round of review. This would streamline the process, and save at least three months in the process (by not having a second round of review). That would mean three months less in the assessment process, and being able to allow more current papers into the chapters. Then the SPM could be written in parallel with the chapters, and a single round of review for the SPM could occur at the same time as the final government review shortly before the final plenary.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

I've never been involved with the Synthesis Report, but the SPM could be produced as noted above in response to question 5. In my view the Synthesis Report should be a simple collation of the SPMs from the three Working Groups with some cross-referencing, and not the agonizing task it's turned into.

2g. Adoption of report by the IPCC plenary

I've been involved with two of these. In both cases the WG1 chairs ran the plenary quite well and kept government mischief to a minimum, with the help of the authors present, so that the main conclusions were not changed, but wordings were clarified. This is highly dependent on the WG1 co-chairs maintaining control of the plenary process.

2h. Preparation of any special reports

These should be kept to a minimum to avoid having an almost continuous assessment process taxing the scientists such that no new research gets done.

3. What is your opinion on the way in which the full range of scientific views is handled?

This has never been a problem in chapters I've been involved with. However, there could come a time when one lead author disagrees with the assessment made by fellow lead authors. Perhaps there should be a mechanism for "minority reports" from dissenting lead authors in some way, though this should be avoided if at all possible. Many times "full range of scientific views" is code for naysayers wanting erroneous information to be included for "balance". Information is not a democracy, but opinion is, and the IPCC assessments should be about information, not opinion.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

A very small number of governments try to be disruptive and destroy the process, but a strong Working Group chair can forestall this in cases I've witnessed so far.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

All observed and model data assessed by the IPCC should be openly available. In my view there should be no gray literature cited in an IPCC assessment unless it is called out as such explicitly in the text.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I feel that the uncertainty scale used in the AR4 is adequate and the governments and media seem to understand it.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The IPCC should move QUICKLY when a potential error is discovered. Within a week (or faster) the IPCC Chair should convene the lead authors and CLAs and review editors of the chapter in question, have them make a determination if there is an error, what it was, and how it should have been corrected. This conclusion should then be forwarded to the governments just as quickly, with an erratum attached to the assessment. This is not rocket science, so to speak. The fact that the IPCC Chair let the issue of small errors in the WG2 AR4 assessment fester without taking any direct action is inexcusable since it would have been so easy to address. This should be one of the explicit jobs of the IPCC Chair.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

This is where there is a MAJOR problem in my view. A main task of the IPCC Chair should be to immediately (within 24 hours) step in between attackers and the IPCC process or authors. The fact that this hasn't been fixed is inexcusable. This started in 1995 when lead author Ben Santer

was personally attacked in the media for meddling with the IPCC SAR process. These were all spurious charges that were motivated solely to discredit the IPCC assessment conclusions, but Ben became a casualty when no one stepped in to defend him or the process he was a part of. Apparently the IPCC Chair did not think that was his job. And now we've just seen another episode using the same tactics, and again the IPCC Chair did not step in to defend the authors or the IPCC process. This must be one of the main jobs of the IPCC chair, and rapid response (within 24 hours in the news cycle since that is the timescale of attackers that are politically motivated) is ESSENTIAL.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

With the rise of climate services both nationally and internationally, I see the role of an IPCC assessment shifting. I think the AR6 will be focused more on assessing the climate science information used for climate services, and how those services use that information.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

See above.

11. Any other comments

In summary, the IPCC Chair and Secretariat must give top priority to:

1. addressing errors rapidly and issuing errata to the governments when errors are found (see format for this procedure in #7 above)
2. coming to the defense of authors and the IPCC process when attacks are mounted in the media or by politicians (within 24 hours of the attack being made--this must be a rapid response to be effective)

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Contributing author, Lead author, member of TS and SPM drafting teams

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

The scoping/election/selection processes are not as transparent as they might be; possibly wise to make them more so.

3. What is your opinion on the way in which the full range of scientific views is handled?

In my experience, the procedures were outstanding. If there is a shortcoming, it is that the “skeptical” agenda is overemphasized, and the conclusions reached are conservative, tending to understate the risks of climate change.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The interest and participation of governments lend legitimacy to the effort. In my experience with writing the SPM of AR4, the efforts of certain governments to bias the result were largely successfully rebuffed, so that the SPM was a good document.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The essential tension is that the length of the document was constrained, so the number of citations was constrained. Hence, reviews (including those in the “grey” literature) were strongly favored if those reviews cited the primary literature. Grey literature from NGOs should not be cited, I believe, with refereed scientific literature preferred together with governmental reports. To achieve this, though, there should be greater allowance for citing primary literature in the reports, even if this means smaller type in the references or longer reports.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I believe that it is done very well, considering the difficulties.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The web site and the pdf downloads should include a date stamp, and there should be a corrigenda added when needed.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Very well done, actually.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Eventually, I believe that the full-assessments should be more widely spaced—10 years? 15? With shorter, faster, topical reports prepared between.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Government focal point

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Los políticos y gobiernos son mu cambiantes, tal vez podría solicitarse a los puntos focales de que las cancillería se encargara de proponer preguntas pertinentes con el fin de que los tomadores de decisión política puedan manifestar sus inquietudes en un lenguaje más apropiado que el científico propiamente dicho. Las propuestas serian canalizadas por el punto focal.

2b. Election of Bureau, including Working Group chairs

Las organización del IPCC tiene la Fortaleza de solicitarle a las partes la correspondiente acreditación de los participantes delegados y se ha incluido dentro de los requisitos de nombramiento la representación geográfica. Una debilidad es que esa representación geográfica no coincide con la de la Convención Marco de Cambio Climático.

2c. Selection of lead authors

Esta elección es un poco subjetiva, en el entendido de que mucho se fundamenta en el curriculum de los involucrados, considero pertinente que aun cuando eso es importante, no se deje de considerar la participación geográfica o los grupos organizados por región como el GRUCA, GRULA, CARICOM, etc. para que sean estos quienes propongan sus líderes.

2d. Writing of working group reports

Lo mismo del item anterior es válido para este.

2e. Review processes

Mucha de la literatura científica esta en idioma ingles, pero existe investigación por parte de muchos países en otros idiomas; el proceso de revisión debería por lo menos de considerar los siete idiomas oficiales de la convención de cambio climático. Considero que el Punto Focal del país podría orientar al grupo de revisión sobre las fuentes de literatura existentes en su país, en la temática que corresponda.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Por tratarse de un resumen para tomadores de decisión política, es indispensable que dichos resúmenes sean más pequeños y que determinen el costo asociado a las medidas propuestas. Es indispensable para el político, entender que el costo de la inacción es mayor que el costo de las acciones nacionales contra la amenaza del cambio climático.

2g. Adoption of report by the IPCC plenary

Me parece que en este sentido la secretaria del IPCC debe proveer más tiempo a las partes para la revisión cuidadora de los reportes, con lo que se incrementaría la participación de los países en la Plenaria

2h. Preparation of any special reports

Se debe motivar a los investigadores de reportes especiales a consultar a los Puntos Focales sobre los posibles aportes del país a dicho informes. En la mayoría de los países, la convención a provisto de recursos financieros para le elaboración de proyectos sobre vulnerabilidad, adaptación, riesgo, amenaza. Dichos resultados pueden enriquecer los reportes especiales y las contribuciones de los países verse mayormente reflejados y justificadas ante los entes financieros, sirviendo como in indicador a tomar en cuenta por las agencias financieras para la dotación de recursos.

3. What is your opinion on the way in which the full range of scientific views is handled?

Parece mantenerse cierto sesgo sobre la rigurosidad científica de personajes e instituciones de algunos países como Latinoamérica. La conformación de los grupos de trabajo demuestra que la mayoría son de origen Europeo, Usa, Canadá y se incluyen algunos países grandes como Brasil, Argentina pero algunas regiones como Centro América y el Caribe quedan invisibilidades. Por este motivo, propongo una mayor representación geográfica, así como se toma en cuenta para las elecciones.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Es importante la rigurosidad científica siempre y cuando se respete los aportes de los gobiernos, en este sentido el Punto Focal juega un papel importante ya que ha sido acreditado por la

Cancillería de su país para representarlo, es la persona ideal para presentar las inquietudes y aportes que colaboren con el entero desarrollo del proceso.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Debe considerarse que la literatura no solo está en el idioma inglés por lo menos debe incluirse toda la información que se encuentra en los siete idiomas que la secretaria considera mayoritarios. El punto focal de cada país es el eslabón entre los grupos de investigación, revisión o desarrolladores y por tanto podría ser un valioso instrumento para dirigir a los consultores en la dirección apropiada para corregir la información pertinente

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Se ha podido observar que el tema de la incertidumbre se ha manejado en forma diferente en los diferentes grupos de trabajo, lo mejor sería establecer un comité de redacción que establezca directrices a los tres grupos de trabajo referente a temas como el metodológico, generando mayor seguridad y fortaleza al entero proceso del IPCC

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

La calidad y control de los datos es responsabilidad de las instituciones que hacen uso de ellos. Por supuesto hay mayor grado de confiabilidad en instituciones reconocidas internacionalmente pero nuevamente el Punto Focal debe jugar un papel predominante en el reconocimiento de estudios con rigurosidad científica y que por lo tanto podría servir como un pre evaluador de la información que llegue al IPCC. Se identifican errores graves en la documentación del país, esto debe ser sometido a las autoridades de gobierno para que ejerzan los controles necesarios. Esto también permitiría dirigir recursos financieros hacia los países que más lo requieran

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

La forma en que el IPCC se ha comunicado ha sido apropiada, principalmente a un nivel científico y político, pero no necesariamente han sido estudiados los resultados de los informes a nivel de la sociedad en general. El IPCC debería darse a conocer a través de las noticias internacionales con más frecuencia, no solo cuando se presentan informes especiales. Podría elaborarse material en videos en los idiomas reconocidos por la secretaria del IPCC y repartirlos entre las delegaciones de los países, haciendo un anuncio en plenaria sobre la necesidad de que las partes partes participen en la divulgación de información relevante sobre el cambio climático, para que la misma llegue a los noticieros de cada país. Esto se podría hacer en cada reunión anual, con el fin de mantener informado al público en general.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions

for an alternative process?

Un proceso alternativo podría ser que de la membresía que cada país paga a la convención, se asigne un porcentaje que complemente los recursos financieros que aportan los donantes al IPCC. Otra forma sería considerar la labor del IPCC como mecanismo de observación e investigación necesaria para definir medidas de mitigación y adaptación al cambio climático, como tal, podría analizar la posibilidad de que sea financiado a través del fondo de adaptación, producto del 2% del mercado de carbono.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Algunos trámites para la adquisición de información, reducción del tiempo necesario para la búsqueda de información en los países, pueden ser encargada al Punto Focal, con lo cual se reducen costos. Reducir la inversión en impresión en papel, utilizar sobre todo el formato digital.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Government Focal Point

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Strength: a group of experts in relevant fields propose policy questions; these are then discussed at the IPCC session; submitted to governments for comments after comments have been incorporated they are then finally discussed at IPCC.

Weaknesses: at times discussion can be very political though not compared to what normally happens at UNFCCC sessions.

2b. Election of Bureau, including Working Group chairs

Strength: the election is very transparent and there is regional representation.

Weaknesses: non so far in this process

2c. Selection of lead authors

A list of all potential lead authors (with CVs) is sent to the secretariat for selection by National IPCC Focal Points. The secretariat then selects candidates with the requisite qualifications. It is a good system under circumstances.

A better way of selecting these authors should have been on individual competences and commitment to the assignment. Maybe there should be a way of short listing the proposed names and thereafter an interview carried by a neutral institution. (cost could be prohibitive)

2d. Writing of working group reports

2e. Review processes

I do not know how these processes are done

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

The IPCC proposes chapters for these reports; which I think is good as all countries participates in developing

2g. Adoption of report by the IPCC plenary

Adoption of report by the IPCC Plenary is transparent. However it would have been better the reports are reviewed by an independent body. This body could be paid by the IPCC secretariat before submitting the report to the IPCC Plenary

2h. Preparation of any special reports

Special reports are prepared by experts in the field. After the reports are prepared they should again be reviewed by an independent experts in the field

3. What is your opinion on the way in which the full range of scientific views is handled?

The challenges in climate change projections are the same as those in weather forecasting as there are a lot of uncertainties in the science of the atmosphere and ocean circulation. The other science of adaptation and mitigation is quite straight forward because this can be done in laboratories. We know how plants and animals will respond when exposed to certain environmental conditions. More efforts should be done in the understanding the atmospheric and oceanographic processes and the interactions with other systems.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The IPCC is a very important institution in the whole process of understanding the whole issue of climate change; as mitigation and adaptation strategies depends on the results of IPCC findings. Governments should be more involved and facilitate the operations of IPCC particularly the atmospheric/oceanographic modeling and modeling in other sectors like water, agriculture (bur these depend on accurate and reliable information from the climate modelers-atmosphere as well as ocean

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

In order to have a better report I am on the opinion that as much literature as possible should be used. Non-peer reviewed should not be given high priority. If non-reviewed is required then it should be peer reviewed or the originator should be asked to support it objectively

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

As written above, the characterization and handling of uncertainties in each working group report should be addressed by giving those reports to independent bodies. This will increase credibility in most of the IPCC reports

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

This can happen due poor funding. However, this problem should be given high priority, because with poor quality data always results in, not poor quality results, but totally wrong information which can lead wrong adaptation and mitigation measures

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The problem here is that not so many people know the science of climate change. There is a need to inform the media on the science of climate change who on the other hand can be in a better position to inform the public. Indeed many people have had about climate change, but are they convinced that their activities contribute to climate change? To many it is just another buzzword

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Can you clarify on this? Which model are you referring to?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The current organization structure is ok. However, apart from the working groups in place, there should be independent consultant bodies. The funding should be increased to support the activities of the IPCC. Sometimes plenaries are hurried because few days are allocated for the meetings

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Government focal point

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

should promote better relationship with scientific community

2b. Election of Bureau, including Working Group chairs

good

2c. Selection of lead authors

o.k.

2d. Writing of working group reports

make some more popular publication for non scientific community

2e. Review processes

o. k.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

o. k.

2g. Adoption of report by the IPCC plenary

o. k.

2h. Preparation of any special reports

maybe about main uncertainties in climate change issue?.

3. What is your opinion on the way in which the full range of scientific views is handled?

To have broader approach in discussions with "climate sceptics"

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments have to have main role in this process, in organizational part.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

It would be useful to public reviews of observed data with assessment of their valueability

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Uncertainties are too wide and people need explanation why.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Public new data and identification and rectification errors, as soon as possible.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Make communication direct for governments and also for general public with clearly identification of uncertainties.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

o.k.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

o.k.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Convening lead author, lead author, coordinating lead author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

IPCC has done a consistently good job of scoping and identifying policy issues. I do not have any suggestions for improvement in this area.

2b. Election of Bureau, including Working Group chairs

This was excellent in 2nd, 3rd, and 4th Assessment Reports. The Working Group III chairs and their supporting staff, have been outstanding.

2c. Selection of lead authors

Mixed. IPCC works hard for geographic diversity. This is one valuable criterion, but it is not sufficient to choose a lead author. The result is that some of the lead authors (generally although not always from developing countries) are clearly not qualified to be lead authors and are unable to contribute in a meaningful way to the writing of the chapter. This is a problem for a variety of reasons.

The solution is to do a more careful screening of the candidates that are put forward by their governments, and request alternate candidates when the person clearly does not have the right background.

2d. Writing of working group reports

With the exception of the problem above, the writing is done very well.

2e. Review processes

Cumbersome and time consuming. All trees and no forest: just hundreds of "picky" points, a relatively small percentage of much value. Solution: fewer reviewers but more time given for the reviews. Reviewers need to be carefully chosen and it should be made clear to them that it is essential that they give much attention to the review.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

I have not been directly involved in this.

2g. Adoption of report by the IPCC plenary

It's very painful -- word by word -- with some countries causing the process to be even more painful. Suffers from long discussions about minor issues and often inadequate attention to more important ones. I do not know how to fix this. One possibility is to give each country a fixed number of challenges -- more for more populous countries and fewer for less populous one.

2h. Preparation of any special reports

I've only been involved in one. I was not sufficiently active to form an opinion of the process.

3. *What is your opinion on the way in which the full range of scientific views is handled?*

I have found the range of views in my area to be handled with great respect. Any viewpoint including viewpoints that are different from the mainstream and heard and addressed (although in the end not necessarily agreed to). In my chapter, we have never had anyone complain about their views not being heard.

4. *Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?*

It is good to have governmental approval. But it is often painful. The role of governments should be streamlined -- for example, by giving them a fixed number of opportunities to raise issues.

5. *Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?*

Unfortunately some of the most important new information for the assessment has not had time to get into the peer-reviewed literature. The inability to use this information results in the reports being out of date in some areas, sometimes in the most important areas. A better solution would be to allow non-peer-reviewed literature to be included after an appropriate review process overseen by the IPCC secretariat.

6. *What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?*

The problem with the way that uncertainty is handled is that different chapters apply different judgments in assessing uncertainty. Instead of letting uncertainty be established by each chapter, an improvement would be for the chapters to identify the key statements for which the uncertainty should be made explicit, then have a committee propose uncertainty levels), and finally have the chapter leaders agree or disagree with the assignments. Where there is disagreement, IPCC should have a process to resolve that both parties consider to be fair.

7. *What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?*

Each chapter is expected to and should address data quality. In my judgment this is as it should be. It would be desirable for IPCC to hire fact checkers after each draft final chapter is completed. Any disputed facts could go back to the chapter authors.

IPCC has no formal process to handle rectification of errors. Any report covering in depth so many different subjects put together by a large group of volunteers is bound to have errors and this should be recognized. IPCC should put out a correction after a certain period has elapsed from the issuance of the report.

8. *What is your view of how IPCC communicates with the media and general public, and*

suggestions for improving it?

IPCC was much more proactive and vocal about its findings for the 4th Assessment Report. No doubt this is controversial in some quarters. However, given the tremendous amount of work that goes into the assessment reports, widespread outreach is very desirable. My suggestion for improvement: allocate a meaningful budget to outreach led by chapter co-ordinators or their designees for presentations to different groups after the report is issued. Also, make the viewgraphs of the presentations widely available.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I think it is a good process.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

So far, the IPCC management and secretariats have performed admirably. As noted, funding should be provided for outreach of individual chapters after the report is issued. Otherwise, the arrangements are ok. (For those of us of a certain age: we need permission to purchase upgradeable air tickets.

11. Any other comments

Do not let the criticism of IPCC lead to a more bureaucratic process. If that happens, many of the most outstanding participants will likely be discouraged from active participation as they have in the past or even being participants in the future. That would ultimately spell the end of IPCC as an outstanding contributor to and synthesizer of knowledge relevant to climate change.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Reviewer, CLA, LA (chapter and Synthesis Report), participant in the final government plenary. Also CLA of a special report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

This has been poorly done by the governments, but I am not sure that the scientists could do any better. I think an iterative interaction between the CLAs and Bureau - with the requirement that both sides agree - might help!

2b. Election of Bureau, including Working Group chairs

The choice of co-chairs is political in terms of the election of the non-primary (ie, the non-TSU head) co-chair. The co-chair that runs the TSU is really selected by the governments who agree to support the TSU and that is reasonably agreed upon ahead of time. The election of the Chair is now highly political (this problem began with the USA's efforts in 2001) and can result in Chairs with little scientific expertise and support by the working scientists. The co-chairs have generally been selected from the science ranks.

The Bureau election seems illogical, but I have no idea how it works.

2c. Selection of lead authors

Complex balancing of political, scientific and editorial needs. I only participated in LA recommendations for the TAR and thought it seemed fair - more recently I would say that some favoritism for friends of the co-chairs and some political interests (within a country) has surfaced on occasion. But the co-chairs do have to deliver the report, so they need some latitude to pick those who can work/deliver/write.

2d. Writing of working group reports

Done as well as I could imagine.

2e. Review processes

Painful for the CLAs, but excellent in terms of improving the reports. Overall, excellent.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

The SPM works, but I have not been happy with the drafting of it. Not sure how to improve. The Synthesis is always awkward and is far too constrained by the Bureau and governments. I heard about the Syr from AR4 and participated in that for TAR - I am not sure that they added much, and the last one (AR4) sounded (hearsay) chaotic from lack of informed leadership, while the TAR was stuck with the wrong questions set in advance by the governments/bureau.

2g. Adoption of report by the IPCC plenary

Everyone I went to went well (although messy) - I saw the overall process as improving the SPM.

2h. Preparation of any special reports

I worked on the Aviation SR and thought it went very well and had a major impact.

3. What is your opinion on the way in which the full range of scientific views is handled?

I think it is done reasonably, but of course as CLA, I have had to make decisions on how to do this for my chapters.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

For the most part I have seen the governments take a fairly careful "hands-off" approach when scientific decisions are being made, but not always. I firmly believe in the current SPM process.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

I think it works fine as is. Many of the more difficult or yet-to-be-published papers are available on an ftp site. Moreover, the IPCC reports are NOT meant to be literature reviews. They are also NOT a consensus report. The chapters must really be a fair but critical evaluation of the literature and current knowledge of the science. Every viewpoint should be considered, but it does not have to be included in the chapters. Without a critical review and some expert judgment by those leading researchers in the field, the assessments merely become a bibliography.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

While the interface on uncertainties between WGs is ugly, it is OK as is, much of the uncertainty is based on expert judgment and it becomes only truly numerical when propagated through the system. It would be nice if all WG could agree on form, but I am not sure that it would really make a difference.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Because the CLAs, LAs and even co-chairs are effectively dismissed after each report, there is no real continuity. The Bureau is supposed to be the continuity, but that does not have the scientific expertise. The IPCC HQ (Chair & Sec) also do not have the necessary expertise to make sound judgments on errata and how to fix. Thus this is a currently dysfunctional part of the IPCC.

Re QA/QC - it is handled by the peer-review / publication process and it should not be IPCC's responsibility.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The IPCC used to have a very good interaction with the media and public under Bolin and Watson. Possibly because those leaders were sharp, used the scientists about them very well (i.e., generally deferred questions/interviews to the co-chairs or scientist writing the reports), but they

also were able to absorb the depth of the reports they chaired. Many of those key leadership characteristics have been lost since 2001.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

None obvious. It works better than any other assessment reports that I have participated in.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

At the WG level and below, I see a stable, sustainable leadership. This is primarily because these are selected by the individual governments who want to involve their top scientists. They have for WGI always picked a leading scientist and worked to ensure participation by their leading scientists.

At the head (HQ/Secretariat level), however, logic has not always worked and the operation becomes an international fiefdom selected through political maneuvers rather than scientific leadership. Illogical, non-communicative and even quirky decisions seem to be par. The Sec does not effectively use the WGs and CLAs. I believe that this needs a clean sweep to revitalize the IPCC.

11. Any other comments

none

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Reviewer, author in some of the early IPCC assessments

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Because the skeptics have such direct effect on the public's knowledge and opinions on climate change, I think the report needs to provide more factual information targeting the public. The public knowledge greatly driven in the U. S. by the talk show conservatives and not by carefully crafted statements by the National Academies. I would like to suggest that there should be section in the next assessment that takes on say the top 10 or so issues raised by the skeptics. Of course this is buried in the IPCC documents and it is indirectly addressed in the policy makers summary. I give many talks to the public and the same questions come up all the time. Maybe a separate document should be prepared for specifically for public. It can refer back to more

specific pages in the overall document.

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

There need to be a process for making corrections in the report that is swift and accurate. The media's attention is measured in hours to days. There should be standing committee made up of chairs of the chapters that can meet on the telephone to issue corrections.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

I worry that twisting arms of skeptics to be involved will mean that the minority viewpoint will water down the recommendations of the report. Consensus does not lead to the best science.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

In some fields non-peer reviewed is the way the science is done. It just has to be carefully used and identified clearly.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

See my suggestion earlier.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

There needs to be some turn over of those involved in the assessment.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Review editor

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

I have no direct idea on the processes involved in the a to c steps, as review editors enter in the slate only during the second year of the report preparation. My feeling is that steps a and b have been well done for the few chapters I have been closely associated with, in particular oceanography and paleoclimates. Working group chairs are key to the WG efficiency, and their authority is based only on the acceptance from the members of the WG.

c: I am not certain that each lead authors are individually the best representatives of the discipline they represent, but they are good anyway, and I have been impressed by the quality of the discussions within the WG. It is evident, from my own experience, that individual biases, within the WG, are rapidly controlled by the joint group expertise and the review processes.

2d. Writing of working group reports

Content of the report chapters, for those I have been involved in, are first defined by the main ideas to address, taking in account the major recently published results, and resulting illustrations. Initial writing of the paragraphs depends on each lead author's expertise, but are heavily reworked within group discussions, and after each step of the IPCC process. I have seen group analysis resulting on quite different interpretation and wording that what was proposed initially

2e. Review processes

The role of the review editors is critical at this point : I observed lead authors considering that comments from non experts are of no interest and should be dismissed. It was my role, among

others, to understand what was the strength of each comment, and convince the WG to improve the analysis. Often I was pleased to see that my personal intuitions corresponded to important comments from reviewers: I was certainly more efficient there to obtain necessary reanalysis than on domains I had no expertise. Probably, having 1 or 2 more qualified review editors per chapter would help in strengthening that step.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Chapter report results from consensus written from the best available science. Synthesis derive directly from these results, and are driven by science. Summary for Policy Makers, because written by both scientists and politics, are more difficult to assess. But they are just a "digest" part of the available information!

2g. Adoption of report by the IPCC plenary

idem : the whole report is available, and written in legible terms for those wanting to get the information, even if they are not specialists : everything is on the table!

2h. Preparation of any special reports

no comment, I have not been associated with those. But I love to use them in my teaching, and I did not find any problem in the expressed science, within my knowledge.

3. What is your opinion on the way in which the full range of scientific views is handled?

I do think that all the scientists I met during the IPCC meetings are incredibly dedicated people, convinced by the science they handle that there is a real problem, and trying to convey the messages to all. Because they are so convinced, the IPCC process must check that they do not bias results to be more convincing. This is the role of the whole IPCC machinery.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

For governments which put confidence in the science they finance, and leave the science administration to select their representatives, I have no problem, they strive for the best. I am not certain this is the case for all nations. In such case, however, IPCC does have also an educative role...

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Beware of free literature! The present rules I think are fair, even if very recent work with revolutionary results may be eliminated at short term. If the science stands, they will eventually be taken in account for the following editions.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

This is a critical point. I think "uncertainty" culture is insufficient within most individual science training. At least one of the review editor within each chapter should be highly trained in statistics and uncertainties. I had problems, within my WG, for initial lack of group competence in the discussions to separate trends vs variability vs uncertainty. A quality analysis existed at the end, but it took time to build!

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

This is basic policy for good science. Loopholes exist, as within individual universities and labs, but the review policy is there to help track these problems. And if it did not work in specific cases, this means that that concerned discipline is not ready for IPCC and should be excluded for the following assessment phase! Better no data than wrong data.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

IPCC is certainly not as efficient to communicate that certain lobbies. But IPCC associated scientists spend a lot of energy to explain methods and results : tens of thousands of talks and conferences across the world each year, millions of auditors. The material provided to support the talks is of good quality. Besides, professional communication is a private game, with their own rules not always driven by humanitarian principles.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

No specific suggestions : I am impressed by the dedication and professionalism of the associated people. If we consider the bureaucracy involved in the whole process, how could you get as much top quality synthesis work without that total dedication! As long as the international willingness operates and is supported by nations, it will succeed; but please, do not discourage the involved scientist! Help to get actions done to control C-energy curve and over exploitation of earth resources!

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

See my comment to 9 : It is in getting actions done that will be reinforced the enthusiasm of the best, and efficiency of the whole process.

11. Any other comments

Strengthening the open review process and responsibility of the review editors in the leading team of each WG is certainly the first priority for improvement (+ include statistic experts in

each WG).

1. What role(s), if any, have you played in any of the IPCC assessment processes?

LA, CLA, IPCC Bureau member, RE

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Scoping process is ok. We have NO policy questions, since IPCC is a scientific and policy neutral organization. However, the science on climate change and its consequences as a whole is POLICY RELEVANT nowadays.

2b. Election of Bureau, including Working Group chairs

Ok.

2c. Selection of lead authors

In the selection process, it is expedient to give preference to governmentally nominated representatives of academic community (experts from research institutions and universities), since IPCC is a SCIENTIFIC INTERGOVERNMENTAL body.

2d. Writing of working group reports

Ok.

2e. Review processes

It would be expedient to involve top level scientists as independent expert reviewers. Some assistance of the ICSU might also be useful.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Governments are to play more active role in the formulation of major questions to be highlighted in SR and SPM.

2g. Adoption of report by the IPCC plenary

National IPCC Focal Points should pay more attention to advance explanation of the essence of coming reports to their governments.

2h. Preparation of any special reports

The same procedures as for assessment reports should be applied.

3. What is your opinion on the way in which the full range of scientific views is handled?

Views of any established professional scientific school should be reflected in IPCC reports.

Views of individuals different from all scientific schools should be carefully analyzed and evaluated, but not included automatically in the assessment.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

See above (2.6 and 2.7).

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Peer-reviewed papers, reviewed monographs and books having ISBN and ISSN, and reports of WMO and national hydrometservices are to be assessed to the extent possible; Other sources should be carefully analyzed and evaluated.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Simplification in the characterization and handling of uncertainty is obviously needed.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The IPCC web-site should have a page with ERRATA. This info can be updated or altered any time. Technical or typing errors could be corrected on the responsibility of the IPCC Bureau. Major errors could be corrected after respective decisions of the IPCC Plenary.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

IPCC may have a press-secretary or spokesperson for monthly briefings (if needed)/

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

No suggestions.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

No suggestions.

11. Any other comments

No comments.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead author, Review Editor, Participant in scoping meeting, CLA

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

At least in the chapters I worked on and liaised with, this was done well – thoughtful and with considerable consultation

2b. Election of Bureau, including Working Group chairs

I have enjoyed working with the Technical Secretariat for the Third and Fourth Assessments and for preparing for the Fifth Assessment and have always been impressed by their knowledge and commitment.

2c. Selection of lead authors

It is good to see the care taken to get a good geographic, gender and discipline balance. Perhaps some governments need to be encouraged more to consider who within their country should be nominated. The Bureau also needs the possibilities of nominating some lead authors where there are particular gaps

2d. Writing of working group reports

Perhaps I was lucky to work with particularly good CLAs but in both the Third and the Fourth Assessments, the CLAs managed the chapter writing well and encouraged the efforts of the LAs

2e. Review processes

The review process was certainly exhaustive. Very important that governments feel they can

review the drafts and comment – even if a small proportion of the comments and suggestions were inappropriate.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

I was not involved in this although my colleagues that were stressed its importance for making government representatives engage with the assessment.

2g. Adoption of report by the IPCC plenary

Sorry – no experience on this

2h. Preparation of any special reports

Where there are particular gaps or particular issues (eg the plan for WGII and WGIII to hold a joint meeting on human settlements), there are a useful and important way of addressing these

3. What is your opinion on the way in which the full range of scientific views is handled?

Generally this is well done. No-one anticipated how rapidly a network of climate change doubters would emerge or their tactics in seeking to discredit the IPCC. This does need careful consideration – including in part ensuring that legitimate queries and questions do get fully considered (and are seen to be fully considered).

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I do not know much about this – but if the IPCC is to be influential on governments, governments must feel engaged with it, while also recognizing its independence.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

In general, the IPCC has managed this well – with a strong commitment to rigour and to review. In part, it was bad luck that such a high-profile mistake on the likely life of the Himalayan glaciers was made. I suppose this teaches the IPCC to be very careful for the Fifth Assessment.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

This is done well – although perhaps the explanation of how and why it is done for a general audience needs improving

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

With hindsight, the IPCC should have been better prepared to handle any identified mistakes and to handle the climate change skeptics. This needs to improve within the same commitment to being open and transparent

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

See above. It might consider setting up or supporting a briefing programme for journalists

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

No suggestions, except perhaps the more routine use of expert reports where some thought needs to be given to what is the latest consensus on what we know

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

For some CLAs, LAs and Review Editors, it is difficult to find the time to do the work needed when this is not remunerated. Perhaps more encouragement to governments in high-income nations to provide some support for their citizens who are chosen? I am not sure how this works for those from developing countries or least developed countries.

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

LA, CLA

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

The scoping is as far as I know done in a dialogue with the UNFCCC. Some of the policy questions that have been formulated previously have not been very clear, so some interpretation necessarily has to be done in the assessment process. It is my opinion that the LA's and the bureau should have more freedom to do the scoping based on an assessment of key scientific questions. This reflects that I think IPCC should move in the direction of being a more independent scientific body

2b. Election of Bureau, including Working Group chairs

The election of Chairs very much has been dependent on government financial resources, which is a weakness since this does not automatically imply that the most qualified and trusted candidates are chosen. May be governments should provide funds to a TSU funds, which could support the chair that is chosen.

2c. Selection of lead authors

I am not sure that this process has been totally transparent. Formally it is the job of the Bureau, but I think that there is a lot of politics around it also

2d. Writing of working group reports

This has worked well in WGIII

2e. Review processes

The process has been very qualified and well documented

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

I am not sure that the Synthesis report of AR4 has been carefully coordinated with the general report

2g. Adoption of report by the IPCC plenary

It has worked well and critical issues have been discussed in special groups

2h. Preparation of any special reports

I have no experience with that

3. What is your opinion on the way in which the full range of scientific views is handled?

I think that it is a fair process, and I have myself participated in several review rounds. I think that the problem to a large extent is that the critical voices do not at all participate in the review process, but rather go out in the media afterwards and criticize that their points are not included.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

There should be a distance between government discussions and the IPCC process. Governments should not put a pressure on IPCC in order to make the scientific community answer very political questions that are more an issue of the COP. I think that there has been such a pressure on IPCC in the AR4, which was also clear up to the COP 15 meeting (on the 2 degrees issue)

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

I think that the current procedures facilitate using a broad range of literature.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I think that the uncertainty guidelines are useful, but they were not fully implemented in the WGII SPM

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

There must be introduced a procedure for handling this

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

IPCC Chairs should only directly communicate conclusions from the IPCC reports nothing else

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I think that IPCC's work is much needed, my suggestion is that IPCC stays as a very scientific body and stay away from very political issues

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The assessment needs to be comprehensive, and I do not suggest any fast policy updates an assessment of this scale?

1. What role(s), if any, have you played in any of the IPCC assessment processes?

IPCC Bureau Member, review editor

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

good no comments

2b. Election of Bureau, including Working Group chairs

good no comments

2c. Selection of lead authors

good no comments

2d. Writing of working group reports

good no comments

2e. Review processes

good no comments

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

good no comments

2g. Adoption of report by the IPCC plenary

less government involvement would be an improvement i.e. less line by line improvements by government representatives

2h. Preparation of any special reports

good no comments

3. What is your opinion on the way in which the full range of scientific views is handled?

good no comments

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments should only be involved at higher level – not at the detailed level

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

good no comments

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

good no comments

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

good no comments

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

good no comments

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

no

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

no

1. What role(s), if any, have you played in any of the IPCC assessment processes?

CLA, contributing author (SPM,TS, chapters). Also Lead Author of and contributor to special reports

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

This seems a rather closed shop. The govt put all past authors forward – but I don't know how much non-IPCC people are ever proposed or how bureau chose. Authors. I wanted to make a suggestion at the AR5 scoping meeting and first tried to go and when not invited I then lobbied people I knew were going. My ideas were tabled but dismissed. I don't know how a person without my contacts would have had input.

I think it is also telling that the report structure has remained largely unchanged. Since 1990 only very minor outline changes and restructuring has happened.

My idea for a change to the outline was based on party requests at the COPs in 2008/9 to have more info on emission metrics. This led to a special IPCC meeting and report in 2009. Emission metrics for mitigation span WG1,2 and 3 and to do a proper job you need combined interdisciplinary authorship. But when suggestions in the AR5 scoping meeting of having chapters with cross WG authors was raised it fell on deaf ears. The same suggestion was mooted for the regional response chapter and detection and attribution chapters that could cross into WGII.

2b. Election of Bureau, including Working Group chairs

I have no experience of this

2c. Selection of lead authors

With the current mechanism you need to trust govts and bureau to select authors without bias. I think they generally do. However, a lot of horse trading appears to go on behind scenes, largely based on geo-political and personality issues. I don't know how else you could do this though. IPCC report writing requires flexibility and compromise. Some of the world's best scientists are neither and could comprise the undertaking if given leading roles; I think there is also a slight reluctance to work with climate sceptics simply because they tend to be difficult personalities to work with, rather than because they have differing views

2d. Writing of working group reports

This was an amazing experience – one of the highlights of my career. Discussions of cutting edge big picture science with the world's best is hard to beat. They were a huge effort though. LA meetings are very intense but very enjoyable. I really got the impression that rigour and quality science comes to the fore. AR4 WG1 authors were amazingly supported by the TSU. It is interesting that two LAs on our chapter (one from a developing country and one European) never wrote a word or contributed much to discussions - nevertheless they remained credited. I felt this was unfair on those that actually wrote the text.

2e. Review processes

Bureaucratic and hard work to type written responses – but well supported by TSU - and 99% of comments greatly improved text. Reviews were pretty comprehensive and covered expert detail and broad aspects. We had many comments (>1000) by two “climate sceptics”. They were painful to address and likely designed to interfere. However, I felt addressing these comprehensively and openly was very important – this took time.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Amazingly thorough quality documents. These were very carefully worded in fine detail (like nothing I have ever written). Authors always made sure these tied in with underlying chapters

2g. Adoption of report by the IPCC plenary

Again plenary for AR4 WG1 was very important to test and verify robustness of conclusions. It greatly improved document. I was surprised that only a few country delegations talked. I felt the science was never compromised by politics.

2h. Preparation of any special reports

I was involved in two and strongly believe that they were better than the larger reports. They allowed for real interactions between policy/science and industry and were very interdisciplinary. Reports were probably not as robust and text not as defensible as major reports. But literature was not really there for these as we were assessing new fields, so we had to do more science on the hoof. However, these reports greatly moved the science forward.

3. What is your opinion on the way in which the full range of scientific views is handled?

I felt this were the tasks for CLA review editors. I like to think I challenged my LAs with alternative views, but I don't think all chapters were so open.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Very important and excellent. They helped focus the text and discussion and pushed us to provide answers where we could.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

AS field expands this amount of literature is becoming a huge burden to review. Sticking to peer review is important where one can. Journals and data repositories would help, so authors can double check results easily. Good review papers are really helpful

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

WG1 AR4 really tried hard to make this consistent throughout - this was very worthwhile and helped focus the mind when writing

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

We had a large errata published for our chapter in AR4. This was very professionally and carefully handled by the WG1 TSU. AS the WGii TSU was disbanded last year, there wasn't anyone to take the flack for mistakes in their report, this was worrisome

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I don't think IPCC should try and communicate science outside of its reports, especially by the people in the bureau – these are non experts and liable to get it wrong. It should though clearly outline and communicate its procedures.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Huge workload of for authors who give up time freely – not sure if comprehensive reports are sustainable. Smaller synthesis reports could be a better placed with annual updates on greenhouse gas concentrations and temperature maybe?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Making sure author travel is paid.....

11. Any other comments

I think a lot of problems arise when authors and WGs go out of scope. WGII should never have covered Himalaya glaciers, which was WGI material. Real care needs to be taken to make reports consistent - maybe sharing authors.

Staggering WG reports would also help

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Convening lead author. Also contributing author, lead author, and convening lead author of special reports

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

I know little about this process

2b. Election of Bureau, including Working Group chairs

I know little about this process

2c. Selection of lead authors

Strengths: transparent – consideration of balance between areas of expertise, regions, countries and developed vs developing countries.

Weaknesses: in the interests of balance, perhaps some genuine experts are overlooked if they come from an oversubscribed country / region

2d. Writing of working group reports

Strengths: very transparent and inclusive. I have always experienced strong leadership and excellent support for the hard working technical support units.

Weaknesses: plenary sessions to get all chapter buy in can be very laborious and time consuming.

2e. Review processes

Strengths: expert reviewers always helpful in my experience. Review process is open and transparent. Experts and governments all get a chance to comment. All responses are recorded and archived or made public.

Weaknesses: none – this is an excellent (though necessarily time consuming) process.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

When it works well, it is a very useful process. This happens when the synthesis adds new insight. When it does not work so well, it ends up as simply a summary of what is the chapters / report

2g. Adoption of report by the IPCC plenary

Strengths: necessary and gets buy in from the IPCC – at this point it becomes more powerful as it is not then a collection of excellent scientists, but a well respected official body.

Weaknesses – painfully slow at times!

2h. Preparation of any special reports

Strengths: targets topical issues.

Weaknesses: none

3. What is your opinion on the way in which the full range of scientific views is handled?

The reports have to assess the science as it occurs in the published literature. The full range of

views are considered, but if 99 papers say one this, and 1 paper says another, there is a proper weighting of the broad consensus in favour of the 99.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments clearly have their own agendas as is clear from the adoption process. Nevertheless, the buy-in from governments at the adoption stage makes the document yet more powerful. It is then endorsed by the parties / governments and becomes theirs – this is what makes the assessment reports strong – not just a collection of scientists but the collected best knowledge acknowledged by governments (even if they do not particularly like some aspects of the content)

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Non peer reviewed literature should be used with caution, but can be very useful in many cases (e.g. data sources) – as long as it is available for scrutiny, it should be allowed in my opinion.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

This is getting better over successive assessments. There is now largely harmonised understanding but different working groups use different terms and schemes. This partly reflects differences in the data (e.g. some data can have quantified uncertainty – e.g. 95%ci, whilst other uncertainty categorations are necessarily more qualitative (e.g. high agreement, high evidence).

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Errors should be posted in a constantly updated corrigendum on the IPCC website – where possible these should also be flagged in the downloadable pdfs.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

No specific comments

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I think the current model is strong and sustainable. It can be improved, but should remain.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

I know little about these matters.

II. Any other comments

None

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Review editor

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

Due to the excessive number of comments (>1000 for the chapter I was involved in) it was not possible to follow up all of them with sufficient care in the interaction between the review editor and the writing team. Critical comments may therefore be overlooked, and too much time is spent on less important comments.

I would recommend to first have a review process similar to that for papers in scientific journals, with top scientists from the field as reviewers (five or so).

The authors then improve their draft, and re-submit to the reviewers. The review editors can oversee this process.

After this step the chapter in question can be submitted to the wider community. It should then receive much less comments as it has been scrutinized and improved before by the best specialists around.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

The process can be sped up by only handling comments that are submitted in advance. The

discussion would then be limited to solving these problems. Current procedure invites delegates to bring up any (new) issue in the plenary. This is not efficient, as time is lost first in formulating the comment, and second in thinking of an answer on the spot by the authors. Both these steps can be prepared in advance, so that the authors straight away present their reply to comments submitted in advance, followed by discussion with those who made it if necessary. The number of comments that delegates can submit in advance should be limited (this is currently also the case with comments made in the plenary).

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

I would highlight the latter in some way, eg by using italics

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

See above, top reviewers can enhance quality control in the production of reports, which should reduce errors.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Do not wait until the media pick up an error, the IPCC should organize a system to find errors itself, also after publication.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Contributing author, LA, CLA

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

This is a critical step in my eyes. A possible improvement here would be to make the UN system more transparent with respect to informing why the resulting policy questions are raised. I think that the process assumes that a procedure is well established and therefore a business as usual strategy is in place. Rather, it ought to be revisited as if the process was taking place for the first time each time. This would assist in preventing misunderstanding of the involvement of scientists at this level.

2b. Election of Bureau, including Working Group chairs

With my understanding of UN processes, I have difficulties in seeing how to improve this. The chairs have to be outstanding scientists in their field and at the same time have some demonstrated skill in communicating with the policy makers involved in the IPCC. The challenge seems to be to define a system, where not only the chairs but also the technical supports units are being offered/hosted by governments. I believe this is a matter of trust in good governance rather than anything else.

2c. Selection of lead authors

LAs must have the scientific integrity necessary to work with the scientific issues. But moreover, a certain knowledge of the needs of the users of the reports must be present collectively, otherwise the report will not answer the underlying questions. The difference between a review and an assessment are subtle. Thus the procedure with nominations from governments is therefore relevant. However, one could imagine an allowance for additional independent LA's to be included. So far this happens via the involvement of CAs.

2d. Writing of working group reports

To my knowledge, the writing teams are working according to high scientific standards. A certain freedom must be allowed for the authors to organize themselves and choose the appropriate literature. The review process should take care of important omissions.

2e. Review processes

The review process is very crucial to the final product. This is also depicted by the share amounts of comments received, even when ignoring the simple ones concerned with language and spelling. However, the review never gets any better than the reviewers. The community with climate expertise does not necessarily volunteer to this huge task. In my own country no-one bothered to carry out a review for WG-I for AR4. In particular, I find it depressing to realise that

those of my colleagues who have criticism with regards to the contents of the report and procedures, never even bothered to suggest improvements to the report, while indeed suited and able to do so via the review process. This is where we have the big divide between scientists involved and not involved - the latter do not want to be seen as part of the IPCC process. This way they can do whatever they want after the reports have been issued.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

The SYR has always been a weak report in my eyes. It builds on the underlying three WG reports and in particular the SPMs. Therefore, the linkage with the underlying science is less stringent. I think that this document is either better left undone or with a more rigorous agenda for its construction is laid out from the start.

2g. Adoption of report by the IPCC plenary

I have difficulties in assessing how this could be done otherwise. As a CLA, I have observed the behaviour of the delegations from individual countries which certainly reflects a completely different mind set than my own as a scientist. The political intrigues which appears to be well known on the international scene are pipping up again and again. This call for a procedure, where the public is not allowed in doors, otherwise plenary would never reach a level where an adoption can be achieved. Many government delegates apparently also takes any opportunity to raise national agendas rather than what is at stake within IPCC, which would dominate if the public was present. A call for independent observers (if such individuals can be identified) who have followed and understand the scientific process behind the construction of the SPM could perhaps assist in making this last step more transparent. But then again, why should all governments in the world conspire to accept a report of the nature of the IPCC reports. Given that they cannot agree to many things, in the first place.

2h. Preparation of any special reports

I know too little of this to have comments. The strengths of these reports in the public is less visible and hence the call for investigations such as this one seems to be an overkill.

3. What is your opinion on the way in which the full range of scientific views is handled?

The balance of information is quite wide. However, this spectrum is reduced somewhat when condensed to the SPM. This is mainly because this document almost only speaks about what is known with some degree of certainty. Mostly, knowledge which is doubtful or far from well established is left at rest within the chapters. But it is likely to be found there. The focus on providing known facts on the other hand does not leave much room to assess material which is suggesting poor understanding. For example, the reports are not meant to suggest where new research is needed. One the one hand this keeps IPCC from defining the research agenda, but on the other it minimizes the reflection about, what needs to be done.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

There are very different approaches to the role of governments (see also 2g above). My own experience is that of a lack of communication before the final plenary, which I find very healthy working for a government organization myself.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

I strongly support the view that only peer reviewed literature can be used in the assessment. It is important that material which has been assessed can be found in a scientific journal by any reader of the report after it have come out of print (or shortly thereafter given the publication turnarounds with scientific journals). However, when it comes to the use of model results, I think that when all data used to generate information is made freely and easy available, simple analysis can be made for illustrative purposes. Complicated analysis must require a peer reviewed publication and hence be seen as part of the underlying material used for the assessment process.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

There is room for improvements. A more unified treatment could be adopted. Although the sources of uncertainties are quite different between the WGs

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

In the light of the AR4 discoveries, I think that transparency is in place. I do not think that mistakes can be avoided entirely. I for one am not perfect. It is therefore important to accept relevant critique at an early stage and have procedures in place to offer amendments or statements about caveats that have been identified since the report was issued. On the other hand, the authors are not on assignment any more, once the report has been adopted. Besides we are not paid (or I am not) for the involvement.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Media is ruling the agenda all over the world. Should IPCC let itself be governed by media? How can anyone communicate with the general public without using the media? Why don't we simply vote about it? My opinion is as qualified as yours - or?

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I find it a bit peculiar that the political system has not realised that climate science although steadily expanding its knowledge platform is not rocketing science in the sense that new results radically altering the view of things are released all the time. If so, the work of IPCC would seem

quite superficial. Do we need updates every 6-7 year? The process as such is indeed heavy, but I have little thoughts about any better model. Besides many countries have national assessments - strangely enough the conclusions everywhere are broadly agreeing on the findings.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

To whom does IPCC report? How can we improve all governments in the world to behave according to a certain view of things? The overall problem - if any - lies with the fact that most governments in the world do not care about IPCC per se, but how the post Kyoto negotiations can be beneficial to their own development, which is actually not a sin, but expected from governments. Is the fuss about IPCC anything but a critique of governments in the world?

11. Any other comments

See 10

1. What role(s), if any, have you played in any of the IPCC assessment processes?

LA, RE, CLA, advisor to the government delegation in IPCC Plenary Sessions. Also Lead Author of a special report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

Generally, I want to point out that much of the recent criticism is pointing to really minor flaws in the process - and the criticism has been incredibly biased towards a "climate change denialist agenda". It is therefore to be welcomed that the current review takes place in an unbiased mode.

Due to the distortion of the process in the media, specific attention should be given, in my view, to those cases where the IPCC has been overly cautious with respect to the actually given risks (a famous example being the insufficient attention the AR4 has given to the non-negligible risk of high end sea level rise). If, as a tax payer or government representative, I ask for the assessment of POSSIBLE risks in the future, then I need to know about all risks, not only those that are corroborated by a very broad set of models.

I therefore propose that the IAC evaluation specifically looks for cases where significant risks have NOT been sufficiently communicated by past IPCC assessments, and that it identifies the reasons for this shortcoming. I am willing to contribute examples for this if needed.

2a. Scoping and identification of policy questions

The policy questions have been well defined by the UNFCCC and need no further elaboration by

the IPCC. There has of course been concern about the translation of UNFCCC goals into specific topics, particularly in the SYR, but my view is that the AR4-SYR represented a rather good way to interpret UNFCCC-defined policy questions in relation to the content of the full AR4 report.

2b. Election of Bureau, including Working Group chairs

I have no direct insight into the process but I noted during the recent Bali plenary that there is a lack of defined procedures as became noticeable when one elected bureau member stopped responding to any invitations. The Plenary was effectively "stuck" at this point and had no legal mechanism to elect a replacement. I therefore tend to agree with the WG3-Co-Chair, Ottmar Edenhofer, who has said that the IPCC needs a proper "constitution".

2c. Selection of lead authors

Again, I have no direct insight into this process. I subscribe to the concept of having broad geographic coverage among CLA's and LA's at every level, and I also support the right of governments to nominate their best scientists for these positions - but it is clearly noticeable that the process occasionally brings authors with poor knowledge or poor motivation into LA positions. I do however not see an easy way to resolve this problem.

I have all confidence in the previous and present bureaus to find "tolerable compromises" for this issue.

2d. Writing of working group reports

The current chair of the IPCC, and many others, have repeatedly drawn attention to the fact that the writing of working group reports takes place almost exclusively in "voluntarily donated time" by most authors, and that the IPCC relies heavily on the willingness of scientists to contribute this precious resource.

Seen from this standpoint, the quality of the reports (two recognised errors in 976 pages of the WG2-AR4, one of the contributed by the Dutch government) is extraordinary. Maintaining this dedication to quality will be crucial and also extremely difficult given the current level of pressure and meaningless accusations by a growing number of journalists and also government representatives.

If governments do not find ways to secure the ability and willingness of contributing scientists to dedicate the best of their resources to the process, then future writing of working group reports will result in much weaker reports than the current standard.

2e. Review processes

I have good insight into this aspect because I dealt with many review comments as LA and have been RE for two elements in the WG2 report.

While the concept of open review is clearly an important feature for the scientific quality

assurance of the IPCC, I believe it is necessary to consider measures in order to keep the procedure feasible. Already now there are literally thousands of comments for every chapter that need to be processed by authors, and I have seen many that lacked scientific substance.

In my view, the following steps should be considered:

- ensure scientific credentials of reviewers by some nomination and approval procedure
- provide the possibility to "screen" review comments prior to having authors work with them, in order to separate purely linguistic or practical comments from the rest, and also in order to eliminate comments that are not contributing to the enhancement of the risk assessment called for by IPCC stakeholders
- enhance technical data management facilities for the processing of the text and review comments data base

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

I agree with the IPCC Chair that the Synthesis Report should remain short and readable.

Generally the process towards the SYR and also the SPMs has been particularly sensitive to the risk of removing high end risk analysis components because some governments have claimed that these were not "consensus". The result of this has been, in my observation, a certain amount of "self-censorship" by IPCC authors in order to not suggest text that might indicate high end risk scenarios.

For policy makers, this is an extraordinarily dangerous development, since the risk analysis in the end is likely to not cover the full range of risks lying ahead of them.

2g. Adoption of report by the IPCC plenary

Every IPCC plenary that I have attended has been among the most physically and mentally challenging moments of my life - but this may just be indicating the level of importance for these events for global society.

Overall, I believe that diplomatic routines in IPCC plenaries are well-conceived and meaningful. Much depends on the individual capacity of the chair persons, and obviously also of every expert in the room.

I am convinced that, without the plenary adoption, the IPCC reports would have much less value for the policy formulation by individual governments, NGOs and private citizens.

2h. Preparation of any special reports

The SRES report is milestone in the literature and has been very influential until this day.

The TAR report on regional impacts was a disaster, and I believe all involved parties recognise this (and prefer not to speak about it any more).

The LULUCF report, in contrast, was useful, in my view, although it conflicted, in part, with the parallel writing of the main TAR reports, which was unfortunate.

The additional work load of special reports to the community is very large, I suggest therefore that the decision of writing more special reports is taken with extreme caution.

3. What is your opinion on the way in which the full range of scientific views is handled?

As outlined above, there is a clear tendency in IPCC reports to not adequately represent the upper end of conceivable risks. This, by the way, is not a matter of "scientific views", but rather a matter of rigorous methodology in the risk analysis.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

It must first of all be said that the portrayal of the government role by media, and hence the public perception of it, is very very far from the reality. I meet a very wide belief in the public (shared even by non-expert policy makers and also many colleagues in the scientific community) that the IPCC might be either "fully in the hand of governments" or else a sort of "scientist's pressure group against governments".

I believe that both views are spread by numerous journalists, subconsciously perhaps, with the hope of standing uncorrected by reality - and with the goal of discrediting the actual process.

A first task must therefore be (as the Secretariate is now doing) to correct the misinformation.

Besides that, I am deeply convinced that the role of governments could hardly be better defined than it currently is. The content of the reports is, in principle, unaffected by governments and corresponds exclusively to the scientific evidence (which is ensured by allowing governments to ask questions while ensuring that the answers are given EXCLUSIVELY by scientists). Likewise, and as outlined above, the plenary sessions and the painful "line-by-line" approval of the summaries represents, in my view, the best possible mechanism to ensure that all possible policy makers' questions actually are being asked.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

There cannot be any assessment of impacts and possible response strategies to climate change on peer-reviewed literature only. The knowledge and experience of government agencies, as well as that of non-governmental organizations, represents a huge part of the human knowledge base and can therefore not be left outside the assessment.

It is evident that the "culture" of assessing this knowledge base, peer-reviewed or not, needs continuous reinforcement towards academic rigour. It appears as if several cases in previous IPCC reports would have merited deeper evaluation of the underlying knowledge base, and some

conclusions might have been formulated somewhat differently if this evaluation had taken place.

There is therefore a real concern as to where the intellectual and time resources for this deeper evaluation could come from - many IPCC authors are already today at the limits of their capacity for this.

While some critics have pointed to insufficient evaluation of non-peer-reviewed literature (and have done so exclusively for cases indicating possibly lower risks of climate change, never for cases of higher risks, although these exist as well), there must be similar critical re-evaluation of findings from peer-reviewed publications.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

This is also a "matter of culture", as far as I am concerned. While rigorous methods for uncertainty analysis and communication can probably not be standardized across the broad range of disciplines covered by the IPCC, we need to continuously improve on each others's skills with respect to the use of available methods.

It is a misconception, though, that the SYR somehow could carry every possible caveat from findings in report chapters up to the synthesis level. At some point, the SYR needs to present the risks with only a simplified narrative of likelihoods and uncertainties.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

It is clear from the recent debate that publication of errata must become a possibility, as it is in scientific journals. Procedures for this need to be drawn that ensure similar levels of review and approval of such errata.

Data quality, in my view, is not so much an IPCC responsibility, but one of the underlying (often national) data centers. Current methods of review for this are broadly adequate, but there seems to insufficient resources from national agencies in order to secure continuous observation of climate change and its impacts.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The IPCC, as legal body, has had almost negligible resources for media communication until very recently, and communication has therefore been handled by its officials such as bureau members, secretary etc. There is some room for improvement here.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

No, I cannot think of another process that would, in a similar way, engage scientists and

governments to a similar level.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

As mentioned above, a "constitution" for the IPCC is urgently needed, although it should (in my opinion) mostly help providing a better legal structure for the type of operation that exists already now.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Convening Lead Author, Member of the Core Writing Team for a Synthesis Report, Lead Author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

This is one of the strong points of the process. Because of government involvement, IPCC reports the politically-relevant questions, which are often not the most scientifically relevant questions. Given the purpose it serves, political relevance is more important than scientific relevance.

2b. Election of Bureau, including Working Group chairs

The need for geographic and gender balance in selecting the bureau and WG Chairs is a problem. The WG Chairs from developing nations do not carry half the load – most are incapable of doing so. I can't comment on the performance of developing nation Bureau members as I have not been privy to Bureau meetings.

2c. Selection of lead authors

The problems caused by requiring geographic and gender balance are equally important at the lead author level. The developing nation participants on my Chapter team had limited understanding of developments outside their region and limited resources to obtain better understanding.

2d. Writing of working group reports

The timetable for writing IPCC reports should be shortened, though given the review process, it is hard to see how to accomplish that. From beginning to end, authors are involved in an assessment report for over two years. That's too long.

2e. Review processes

Given the scope of IPCC reports, the review process is critical. No group of authors, no matter how talented, could consider all relevant literature without reviewers calling it to their attention. The review process would be better if reviewers understood and followed the rules. Too many review comments are dismissed because they make undocumented assertions, provide personal opinions, or fail to explain what change the reviewer would like to see. IPCC should develop a tutorial for reviewers.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

This is a problematic area. There is a bias for the sensational, so undue emphasis is put on single studies, e.g. the hockey stick in the AR and the Himalayan glacier story in AR4. These sensational items tend to crowd out the very solid information in the rest of the report. If I had to adopt a rule to deal with this problem, I would require that the Synthesis Report not be able to use any statement not supported by at least two studies.

2g. Adoption of report by the IPCC plenary

Get over it – it's a political process and will always be a political process. That said, if the WG Chairs strictly adhere to IPCC rules, it's as good a process as I think anyone can design.

2h. Preparation of any special reports

Since Special Reports use the same basic procedure as Assessment Reports, the above comments apply. Personally, I think the grand, review everything model for Assessment Reports has outlived its usefulness. I'd rather see the IPCC issue an on-going series of Special Reports on issues of important to policymakers.

3. What is your opinion on the way in which the full range of scientific views is handled?

In any scientific area, there is a core body of information that is generally accepted. There is a broader range of information that seems reasonable but has yet to be fully validated. And there is a fringe that is speculation and new idea generation that has little or no acceptance. IPCC does a good job of presenting the information in the first two categories. It is criticized for not presenting the information in the third category, some of which will eventually prove to be valid, but the majority of which will not be proven. I don't think it is fair or reasonable for IPCC to be expected to present every idea proposed by anyone who calls himself a scientist. IPCC is responsible for advising policymakers on policy-relevant issues. Like it or not, consensus is the best that the scientific community has to offer.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I think that on balance the role of the governments in the IPCC process is positive. As long as the author's hold fast to the principle that government representatives cannot add anything that is not

supported by the underlying text to the SPMs and the other documents that they review on a line-by-line basis, IPCC reports will be valid documents. I attended the AR4 WG I approval meeting in Paris and watched Susan Solomon strictly adhere to that principle despite pressures from numerous countries to have the WG I SPM make a statement that could not be supported by the underlying report. Her performance should be a role model for future WG Chairs.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

I think the IPCC already does as good a job as can be reasonably expected of covering the literature. If the IPCC provided the tutorial for reviewers that I suggest in my answer to 2e, it could include a discussion of non-peer reviewed literature. My WG III chapter depended heavily on non-peer reviewed literature and I have yet to hear a complaint about its quality.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I have long, and unsuccessfully, argued that WG I and WG II do themselves and readers a disservice by using statistical terminology to characterize expert judgment. I much prefer WG III's approach which is to evaluate the amount of data available and the degree to which it is consistent. I was a co-author on a paper (attached) that looked at the issue, but did not come out as forcefully as I would have liked for change.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

This is probably the weakest part of IPCC's process. Since the IPCC is a review body, it does not do data assurance or quality control in a systematic fashion. It is up to the authors' judgment to accept or reject each piece of information, and as the Himalayan glacier incident proves, that judgment can be faulty for any number of reasons. The erroneous information was accepted by the Chapter team. Once it was accepted there, there was no check on its validity as it was highlighted first by WG II, then in the Synthesis Report. The Core Writing Team did not independently check any of the information in the Synthesis Report. If it was present in the WG report, we accepted it.

Before publication it is the responsibility of the author team to correct any error they find in their draft report. To my knowledge, IPCC does not have a mechanism for identification and rectification of errors found after publication. These are handled on an ad hoc basis, and usually only if there has been sufficient media attention.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Scientists in general do a poor job of communicating with the media and general public. IPCC has an even more difficult task since it is constrained by the approved language of SPMs and the

Synthesis Report, much of which is incomprehensible to the general public. Given the nature of IPCC, I don't know how you improve the situation.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I think the IPCC model for Assessment Reports has outlived its usefulness. As things stand now, the Assessment reports are uneven. WG I presents the latest science, but most of the findings in WG II and WG III are based on earlier WG I reports. At a minimum, the WG Reports should be staggered, an update on the science followed several years later by reports on impacts, adaptation and mitigation based on the updated scientific findings. I first made this recommendation in 1997.

I would have IPCC focus on a series of Special Reports on policy-relevant topics. The science of climate change is well established. It could be updated every ten years with no loss of relevance. There is still much to learn about impacts and adaptation, but a global report has limited relevance. Impacts and adaptation are local. Write reports on region or even small areas. Mitigation technology is global, but trying to put everything into a reasonably-sized report means that ideas that deserve chapters get condensed into pages, discussions that are worth pages get condensed into paragraphs, and fact that require paragraphs to explain and assess are condensed into sentences. The end result is barely readable. Special Reports, on the other hand allow for in-depth exploration to topics. The Special Report on Carbon Capture and Storage is a good example of how well IPCC can present a topic if the authors are given adequate space.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Other than commending the TSUs I worked with for the incredible competence and dedication they brought to their jobs, I have no comments on this question.

11. Any other comments

To paraphrase Winston Churchill: The IPCC is the worst institution for communicating scientific information to policymakers except for all the others that have been tried. Consider the relative impacts of Millennium Assessment of Biodiversity and IPCC Reports.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

IPCC Bureau Member

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Generally satisfactory but occasionally I have the impression that sometimes governments raise policy issues to advance their own agendas (including those in the international climate change negotiations).

2b. Election of Bureau, including Working Group chairs

Generally satisfactory but it is difficult to achieve a regional and disciplinary balance at the same time. The Plenary has to declare which is more important.

2c. Selection of lead authors

Generally satisfactory but it very much depends on nominations from governments. The Working Group Bureaux need to get away from always relying on the same authors for every assessment. There needs to be new expertise brought in. Working Group II particularly need to bring in more experts on adaptation to natural climate variability – this will open up new sources on literature.

2d. Writing of working group reports

Excellent. This is really hard work.

2e. Review processes

Generally satisfactory but the Review Editors really have to be very rigorous and engaged.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

The big question is whether to structure the Synthesis Report around questions or issues. We have tried both approaches. My sense is that using questions has been more successful in getting a good synthesis. Using issues tends to lead to a lot of cutting and pasting and not enough real synthesis. It is also seen as safer by governments – they have a better idea of what to expect. But some of the truly important findings from the 3rd Assessment Report came from “connecting the dots” around searching questions.

2g. Adoption of report by the IPCC plenary

This has not always been satisfactory. The interaction between authors and governments is a unique aspect of the IPCC process. It means at the end of the Plenary both scientists and governments own the SPM. However, it requires competent, rigorous and inspiring chairmanship. Without this we have seen Plenaries waste a lot of time and occasionally the good will of the authors.

2h. Preparation of any special reports

The problem has been that these have occasionally simply served to advance the policy agendas

of one or a group of governments. They require a lot of work and put an additional burden on scientists. My sense is that they can be more focussed. Some potential topics can more appropriately be dealt with through Technical Papers.

3. What is your opinion on the way in which the full range of scientific views is handled?

I'm quite satisfied; the IPCC has tried very hard to be as open as possible. However that is not to say that the assessment reports would not be enriched by more input from a broader spectrum of scientists, developing countries and in other languages.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The IPCC was initially established to provide governments with comprehensive, reliable and accessible information on the issue of climate change. A key role for governments is to provide the feedback to the scientific community on whether their science is useful and policy-relevant, that the scientific community is aware of the issues that confront governments and that there is a mutual understanding of the science.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Non-peer-reviewed literature is important but it must be openly available for others to review and critique.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I have worked during the last two IPCC Assessment Reports on developing a language that describes and communicates uncertainty. This has proved to be difficult; scientists are not used to determining uncertainties across disciplines. This is particularly a problem in the Synthesis Report. But possible of greater importance is engaging governments. There is still some residual view that we can always have 100% confidence in scientific results.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Science advances through scientific scrutiny (and a certain amount of skepticism); it is only through this that we gain confidence in the results. The role of the IPCC is to review as broad a range of science as possibly and draw useful conclusions. Scientists are human and mistakes will be inevitable. Happily, there have been very, very few. Clearly such mistakes, once they have been investigated, need to be communicated. The scientific community needs to reflect on the recent incidences which have suggested some arrogance and tribalism.

8. What is your view of how IPCC communicates with the media and general public, and

suggestions for improving it?

The IPCC and some scientists clearly did not respond well to the media and others allegations. They were generally unprepared for the vehement and by and large unsubstantiated attacks. The IPCC process has succeeded in achieving an ownership of the science by the scientific community and governments. However, it has yet to achieve ownership by the general public (many of whom have little idea of how science is done).

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The IPCC has done extremely well at establishing the scientific basis for the threat of climate change – it has defined the problem. The IPCC needs to devote more attention to the solutions and understanding the human and institutional barriers to action.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The IPCC has to deal with any suggestion of conflicts of interest starting with the Chairman. Furthermore, my sense is that for the Chairman and the co-Chairs their jobs need almost full-time attention.

11. Any other comments

The IPCC was established over 20 years ago. Since that time the landscape has change significantly: the science is now well established, governments are now well engaged, climate change is recognized as more than an environmental issue and the IPCC no longer has the stage to itself. Unfortunately, we are still working on the basis of a model which is 20 years out of date. The worry is that governments are most comfortable with the status quo. It was a challenge to the status quo that put climate change on the public policy agenda.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Contributing author, LA. Also Lead Author of a special report and co-chair of a task group

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

The current system is fine with me, it has worked well.

2b. Election of Bureau, including Working Group chairs

The selection should be made considering science background and less in geographical balance. Of course there should be a balance representation of regions, fields and gender. I believe that some of these members can be elected even though they were not appointed by their governments.

2c. Selection of lead authors

It is fine as it is now. However, I would suggest that IPCC ask the governments to reconsider sometime their nominations. By experience I know quite important scientists there are never part of IPCC because they are not known or not friends from the focal points. Personal feelings should be left aside. Sometime good people are left aside and instead some with little scientific knowledge is appointed by the governments.

2d. Writing of working group reports

It seems Ok the way it is now

2e. Review processes

It seems Ok the way it is now

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

It seems Ok the way it is now

2g. Adoption of report by the IPCC plenary

It seems Ok the way it is now

2h. Preparation of any special reports

It seems Ok the way it is now. It should also consider a better geographical balance and give high responsibilities to important scientists from developing world.

3. What is your opinion on the way in which the full range of scientific views is handled?

It is fine with me. the 3 WGs, summaries and special reports covers all full range of scientific views, compatible with the needs of the IPCC and the expectations from the countries. If something is missing, there is always the possibility of preparing an Special Report.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The governments should have a more active role, not just proposing authors and reviewing the initial drafts. I would suggest that the governments spread the word on what IPCC is and does,

and promote the participation of scientists from all fields contemplated on IPCC reports. Of course, they should also be very efficient in appointing authors, based on their experience, publication record and scientific reputation, and not much on political views or friendship.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Most certainly I support the idea of using peer review literature only, in international journals with editorial committee. However, we must consider that these journal are not only those published in the US, Europe or Japan. Many good journals are published in India, Latin America, Australia, with a rigorous peer review process, and languages other than English. I also support to avoid as much as possible non peer reviewed literature and NGOs reports. However, official studies and reports published by governments should be allowed in the IPCC, particularly for WG2 and WG3. I would say the same about UN documents and reports.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

This is extremely important, and belongs to WG1, and I have been involved on this. It is hard to establish uncertainties and defining levels of it. I strongly suggest that WG1 establishes the rules on this, and that the WG2, WG3, SYR and special reports should used whatever WG1 produces, and not create their own assessment for uncertainties. This would generate confusion. I also suggest, very strongly, interactions between the 3 WGs in the preparation of the reports, so there is consistency in results, methods, assessments.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I think IPCC did well, it admit the errors, it asked the CLAs to work on them, and also published rectifications on the main issues raised by the media after the publication is made. IPCC does not do research, it reviews it, so it is expected that a paper published in an important journal did the analyses of data quality, quality assurance, etc. It also means that the LA and CLAs have to be very careful in checking the literature to avoid problems, and also they should not include their own work only.

Now, the role of the Review Editors for the IPCC AR5 will be of extreme importance, since they have to "control and check" what is written on the drafts, in a continuous contact with CLAs and LAs.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I believe it does well, and that was obvious during the release of the AR4 in 2007, even before the Nobel Prize award. The IPCC is well known in the scientific and government circles, but sometimes it is not known by many sectors of the public. There is a need of a press office with

some “crisis consultants” that can be useful sometimes, and I would also suggest the preparation of material on IPCC and climate change for kids and general public, in various languages besides the official UN languages. The IPCC web site is great, but too many people do not understand Spanish, English, Russian or French, or may not have access to internet.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The current assessment model is fine, at least the scientific review. It is clear that IPCC is a governmental panel, and must have a said on the review, but for me, the review from the government should be more scientific than political. So, I would like to see that some government veto some statements, that may be scientifically sound and strong, but that it may compromise the view of the position of a government on environmental issues. The review process should also include the skeptics of climate change, so they may have their views known, and the process can also help them to understand the science of climate change better than they may have known it.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

It seems fine as it is, may be too many members in the IPCC Bureau. The secretariat is well organized and efficient, and very helpful. May be a better arrangement with the travel office would be needed. Sometimes a traveler can find a cheaper and direct way to fly to a meeting, while the travel office may find routes that are more expensive and full of restrictions and stops, with the consequently need for transit visas.

11. Any other comments

Just one thing, I strongly insist on the interaction between the 3 WGs, and on a more careful analysis of the literature by the LA and CLAs. If a CLA does not have the time to perform his (her) job as CLA, then better find another. In some way, they should be “liable” if something wrong comes from their chapter once is published. An overlook or error from one person may affect the reputation of the entire panel, as it is happening now, and this should not be allowed in the future.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Technical Support Unit, Review Editor, participant in a Scoping Meeting

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

I never found the policy questions particularly helpful and at worst they skew the structure of the assessment making it more difficult to come up with a logical and comprehensive structure for the reports. So at most I would use them to inform authors to assess whatever scientific material there is that is relevant to answering the questions but I would not structure the report around them.

2b. Election of Bureau, including Working Group chairs

In my view the election of WG co-chairs has been effective. This is probably because it has essentially taken place behind the scenes in discussions between governments as to who is politically acceptable but also able to gain the support of the scientists. It is vital that the scientists are somehow included in the process either formally or informally as the one thing that could probably make an IPCC assessment fail are co-chairs that did not have the support of the scientific community. The election of the WG Bureaus is a political process with political compromises. In my view most WG Bureaus have not been particularly effective with one or two very useful members and others who are not particularly useful.

2c. Selection of lead authors

This is a horrendously difficult process and I think it is remarkable that it has worked as well as it has. The challenge of producing a Lead Author team that can work effectively together, has the right balance of expertise, a high degree of geographic and gender balance, along with a balance of scientific views is an impossible one. I cannot think of a better way of doing this.

2d. Writing of working group reports

Again I think this process works remarkably well considering the size and complexity of the task. There are so many ways this could go wrong I wouldn't change it.

2e. Review processes

Again I think it is amazing that this process has worked as well as it has. There is no doubt it is extremely arduous for the scientists involved, having to respond to every comment made throughout several rounds of review but given the importance of getting it right and the scrutiny there now is on the process then I see no alternative. I have sat in many days of Lead Author meetings over two assessment reports and I can honestly say that I have never seen anything other than an honest consideration of every comment. No system is ever perfect but the IPCC process is more rigorous than any other process I have ever been involved in.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Several different methods have been tried for production of the Synthesis Report and I don't think any have been totally satisfactory. Lead Authors are generally chosen because of their discipline expertise and therefore are not necessarily the right people to produce a synthesis which requires a wide interdisciplinary approach and knowledge of how all the pieces link

together. It is also produced at the end when Authors are tired and there is little alternative but to almost cut and paste from the WG reports. I would recommend appointing a small number of Lead Authors of the Synthesis Report, or maybe even the CLAs, who are not Lead Authors of the WG Reports. They would be chosen for their knowledge and ability across all three working groups. If appointed at the beginning of the process they could attend Lead Author meetings from all Working Groups so that they can gain a knowledge of what is emerging from all of them. These would be supplemented by Lead authors of the WG reports to ensure the Synthesis Report stayed faithful to the WG reports.

2g. Adoption of report by the IPCC plenary

There is no doubt that governments try to get changes made to the Reports to suit their political views as well as to clarify the science. In my view this has not succeeded as the scientists have held firm against such changes. However, I think it would be helpful to make it more explicit in the procedures that the scientists do have the right of veto on any change proposed if they feel it is not an accurate reflection of the science. This would help against the perception that governments “re-write” the conclusions and it would increase the confidence of the scientists that they will not be forced into accepting something they do not agree with.

2h. Preparation of any special reports

There is no doubt that Special Reports play a useful role. However, I think the way the subjects have been selected has been a bit random with countries making suggestions in Plenary and then essentially lobbying to get enough support. I think a more rigorous, but not overly bureaucratic process could be followed where governments are asked for suggestions for Special Report topics. These could then be assessed by a committee to see if there is enough material etc and a recommendation go back to Plenary, In this way Plenary still has the final say but they have some objective information on which to base that decision.

3. What is your opinion on the way in which the full range of scientific views is handled?

I think the range of scientific views is handled very well, but there must be a discrimination between legitimate opinions backed up by scientific evidence and opinions which are unsupported by scientific evidence. There should be no obligation to include views that are not supported by scientific evidence. I have been present through many hours of Lead Author meetings and have never seen any legitimate scientific view being given anything other than full consideration.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments play a vital role in the IPCC process. Governments legitimize the process and without them IPCC reports would be just another report by scientists that nobody takes any notice of. Their review comments are often very pertinent and although some of their comments when approving the Summary for Policymakers are politically motivated they also help to make the text clear for non-scientists.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

IPCC Reports are an assessment by the authors, not a review of the literature and this is a very important distinction. In my view Lead Authors should be free to assess any material which will help them draw the best conclusion. This includes non peer reviewed or “grey” literature. It is the role of the Lead Authors to consider the source of the information and hence what degree of weight or credibility to attach to it. This information must also be available to reviewers so that they also can base their review comments on the same body of literature as the Lead Authors.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The way Working Group I defines terms such as “likely” or “very likely” is very valuable so that Lead Authors cannot hide behind vague phrases. They also use standardized error bars on graphs whenever possible so I think an excellent effort is made to consider errors in an objective way. I would like to see a common lexicon such as that used by WGI adopted across all three Working groups.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The rigorous nature of the process picks up most errors, but no process is perfect and errors are inevitable. The one area where I think there could be improvement is what happens when errors are identified after publication of the report. Because there is nothing in the IPCC process about this the TSU started a list of errata for the WGI TAR and put that on the web site. This is a minimum that should happen so that errors are not appearing to be hidden and hence do not get blown out of all proportion.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The IPCC has never had an effective media strategy. It is hampered by the fact IPCC is not an organization that can have its own view on things as its products are reports that are the reports of the scientists, not IPCC. So, IPCC can only use approved wording from the reports because these have been agreed word by word so it is impossible for someone representing IPCC to comment freely. IPCC either has to decide that dealing with the media is not a role for IPCC and form an arrangement with an organization that is free to comment on and interpret IPCC findings. Or changes need to be made to the IPCC rules so that, for example, the Chair of IPCC is able to comment on behalf of the organization. I don't have a solution to this.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

After every comprehensive assessment everyone says that the process is unsustainable and places too great a burden on the scientists. While this is true it is also true that this is such an important problem and IPCC plays such an important role that the effort is worthwhile and is seen by the scientists that way. I do not see any alternative to a comprehensive assessment every 6 years or so.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

I think the structure of a central Secretariat supported by Technical Support Units has worked remarkably well. I think one reason why the TSUs have been so effective is that they have moved around and the personnel change from assessment to assessment. This means that the staff within the TSUs bring fresh ideas and are generally very up to date with the subject. I think there is some merit in also considering fixed terms for the Chair.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

LA, RE, Participant in the SPM approvals. Also Coordinating author and Lead Author of special reports

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

A crucial step in the process: at this moment the weakest nod in the chain. The first steps of the complex IPCC assessments require more specialized preparation. Compare IPCC reports with buildings and the scoping phase with designing the plan of the construction: governments are the principal – the scientific community represents the constructors – what is missing in the IPCC set-up is the architect.

The principals draw lists with what is needed, wanted, preferred, expected, etc. from the IPCC report (first scoping meeting). Between principal and constructors functions the architect that prepares blueprints and plans, from a scoping to a detailed level (to avoid waste of space, materials, need for rework, etc.). The architect in IPCC should consist of a well-balanced selected team of ca. 20 experts by WG that develop a comprehensive and consistent blueprint of the report to come. That blueprint should be approved by the governments in a second scoping meeting. A blueprint is more than a table of contents: it specifies at a quite detailed level what will be covered where – chapter by chapter – and section by section, how the parts interact, what are complements and substitutes, some investigation on data availability, model performances, seeing whether the necessary information and capacities are there to answer the crucial questions, etc. For example: the cross-cutting issues should be solved during the blueprinting process, not during the construction phase of the reports. The architect team could consist of the

WG chairs and the CLA of the chapters, strengthened by some experts that have done such blueprinting work before. Experience indicates that good designs and blueprints can save a lot of time and rework (in my opinion two of the four draft phases ZOD –FOD –SOD –FINAL can be saved; more time would be available for better interaction and quality control; some of the time – say 6 months – will have to be moved from the back-end to the front-end of the process for the blueprinting work).

2b. Election of Bureau, including Working Group chairs

I have no insight in this process: no answer.

2c. Selection of lead authors

Nomination by the governments and selection by the bureau is not the best way to come up with the best teams. I would suggest a more open and transparent process with a call to all scientists via scientific journals, professional organizations of scientists, academia and other channels. Selection of the experts and composition of the teams may be assigned to peers committees of diverse composition but with well-known scientists in the various fields of knowledge with the WG chairs/TSU as secretariat. With a clear blueprint it may be easier to find out what kind of craftsmen are needed to realize the due construction.

The experience in WGIII is that the social sciences are very broad with several schools with different perspectives, paradigms, analysis, conclusions, and propositions, etc. There is no systematic effort to include all main disciplines and perspectives, and to resist the natural force of adopting colleagues of a similar mental perspective. In addition it remains pretty difficult to engage and include in an intense way experts from developing countries; for the least developed countries there is a need for contracting them, mostly through international organizations. In the developing world experts scoring high on the standard indicators of scientific success (publications in disciplinary journals; citations) are mostly unwilling to invest the enormous time to run an active role as author in the IPCC process (structuring it more strictly and limiting the number of draft rounds to two instead of four may increase their willingness). Some disciplines are not very present, for example I met few legal specialists, but this personal experience may be biased.

2d. Writing of working group reports

Key success indicator of a chapter making the best of what is available in data, models and the literature, is the composition of the writers' team, with special emphasis on the role of the CLAs. The latter have to be experienced senior people also in managing a team of high-level academics.

My experience is that lots of time and effort are wasted in processes of starting with a too simple table of section headings, not knowing what precisely is expected on contents or who is there for doing what with the need of many cross-cutting meetings to arrange the most evident rules for avoiding overlap and contradictions, setting the metrics right, performing financial calculus along standard methodologies, etc.

For the ones involved since a few reports this unstructured way of working is easier to digest, but it takes a number of meetings to get new members acquainted to it. This leads to impediments to engage and insert new members rapidly enough (some stay quite distant all the time of an assessment, defect on some meetings, and quit later); it also creates brakes on refreshing the membership in the most optimal way, because some “old boys & girls club” feeling is developing.

2e. Review processes

From my experience the review processes are not standardized enough – there is but a rather formal quality control on the review processes (RE have to sign approval of the report for having sufficiently taken into account the comments). Some REs impose their views too much; most REs are satisfied with a formal response to the reviewer comments. The difficulty is that a good feedback to extensive comments implies often a significant change of the text; then it becomes a task of high expertise to judge how good the comment is processed. Now, REs are added in the middle of the process; perhaps it may pay off to include them as observers from the beginning on (in particular when the writing process would be reduced to one draft & final round).

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

At this moment work on the SPM and Synthesis is started simultaneously with the writing of the chapters. On the one hand this is not very logical; on the other hand it is needed to steer the chapter work as a surrogate plan/ blueprint of the reports. When a consistent and comprehensive blueprint is developed and approved by the policy makers’ representatives in the second scoping meeting (i.e. before report writing starts), the bridge towards the SPM and Synthesis report is made more solid. Progress from blueprint over chapters to SPM & Synthesis will flow more constantly with fewer rework, adaptations, contradictions, etc.

2g. Adoption of report by the IPCC plenary

During the several SPM and report approvals in plenary I observed but a few times representatives of governments that preferred quick consensus above critical review of facts. Overall I was amazed how the draft SPM texts were transformed in much better, more precise and more transparent documents, more adapted to the wide audience they should address. The approval processes were each time exhausting, and they need experienced management teams (WG chairs and TSU) to bring them to a good result. I do not know how to reduce that enormous investment in people’s time, but eventually an overall more structured process from blueprint to final may help a bit (I am not sure). Perhaps the edition of the SPM could include the help of linguistic specialists to avoid opaque and unclear statements, or provide back-up formulations in case some text has to be changed thoroughly.

2h. Preparation of any special reports

The experience of the SRREN is not very different from the one during the ARs. Different is that the Chair-persons of WGIII changed and also the TSU and that a large share of the authors are so to say “freshmen” increasing the difficulties as mentioned sub d) above.

Special reports take of quite some load from the already very complex ARs, and I advice continuation of the practice when the added value of a SR is clear.

3. What is your opinion on the way in which the full range of scientific views is handled?

I have the impression that the “full range” is well covered in WGI, covered to an acceptable degree in WGII, but poorly covered in WG III. On the one hand, this reduction in coverage is normal because one steps from natural sciences more and more into social sciences (see also comment 2.c on the selection of authors). On the other hand, the task of IPCC is to assess the full range of views, also in the WGIII arena. With a more open, transparent and structured recruitment and selection of authors, significant progress seems feasible. Also adopting explicit mechanisms to reflect on comprehensiveness and completeness of views considered could help a lot. Also then it remains difficult to ponder the views in order to avoid that marginal opinions get unbalanced attention in comparison to mainstream views. But conversely, when “urgent and drastic change” is on the agenda, obliterating upcoming views (in the beginning being marginal) would not be helpful in an IPCC context.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments are essential in the Intergovernmental Panel. As a scientist I was reluctant to this experiment in the beginning because science and politics adopt different logics that are not easy to match. But now I must state that the IPCC experience is extremely worthwhile as a platform of co-operation between scientists and policy-makers or their representatives. Some roles should be reviewed: governments as principals (defining the scope at the start, adopting the blueprint, approving the SPM and AR), no government role in nominating experts, in the blueprinting job itself, in quality control of the scientific process.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The regulations proposed by the Chairs and TSU of the SRREN (WGIII) are OK. The composition of the teams is crucial for obtaining a good coverage of the literature, avoiding systematic biases.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

It is important uncertainty is handled explicitly; a lot of progress is realized during the AR4 process. There are guidelines out there, but continuous education and repetition of “how to deal with uncertainty” seems necessary. It may be good to review the guidelines again, make a brief document of it for approval by the IPCC plenary as formal guidelines (or has this been done already?). Every IPCC participant has to study the guidelines before embarking on the IPCC ship (as every automobilist must know the traffic code).

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

What are “errors” and what kind of errors need rectification? Perhaps the IPCC website should maintain an “errata list” (although avoiding errata is better than mentioning them).

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I am not a media specialist (I never watch TV) even I have frequent contact with journalists for interviews on my research work. The openness of the website, the availability of all information, the transparency of the processes, the preparation of slide shows that everyone is free to use, etc.. make a strong basis for the right way of communication.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Basically the present model is sound, but it requires improvements, as described above: a planning/blueprinting phase & assets, a more open composition of the author teams, independently from the governments, etc. see above

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

I offered suggestions in answering preceding questions. Overall I found the management, secretariat and funding OK; it would also be dangerous to assign a significant budget for transforming IPCC into a mini-UN organization, in this way undermining its role as a platform-network-turntable with the WMO and UNEP as parental organizations.

As stated above: the basic structure and working are sound – a number of renovations are recommended to increase the efficacy and efficiency of the processes, and to refine the relative positions and interactions among governments and scientists.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Technical Support Unit, contributing author, Lead Author, Review Editor

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

I have been involved mainly with the chapters on policy instruments. Governments want the chapter to cover questions of current relevance for which there often “grey literature” but little peer reviewed literature. An example is Table 13.2 of the AR4 report summarizing proposals for international climate agreements. Highly relevant at the time; based on two reports and one peer reviewed article with many of the specific proposals available only in the grey literature. An approach that has been used in such cases is that lead authors try to have material published in peer reviewed journals while they are drafting the IPCC chapter so that the published or in press article can be cited in the final draft of the IPCC chapter.

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

Over time the selection process has become more formal and the writing teams have become larger and more regionally balanced. Countries nominate proposed authors. Some countries are more active and diligent than others in seeking the best potential authors. At the start of the Second Assessment we asked lead authors if there were other experts who should be recruited. Then we tried to recruit those experts as lead authors. Sometimes we succeeded. I don't know if nominated experts still have an opportunity to suggest and help recruit additional lead authors. Such a process can of course be used to recruit like-minded experts leading to a biased assessment. But the team selected by the Bureau based on country nominations may also be biased.

2d. Writing of working group reports

My observation is that as with any group endeavour each group operates differently. Some work very cooperatively and productively. Others are quite dysfunctional and require a lot of effort by a few team members and/or the bureau to produce a reasonable product.

2e. Review processes

The review process has become more formal over time with the introduction of review editors and tracking of the disposition of all comments. While labour intensive, I think this is a good system. Comments by reviewers are essential to a balanced assessment. Comments may seek to inject the biases of the reviewers into the assessment. The current system requires that comments be debated on their merits and that the result be recorded for public scrutiny. The system can be difficult to implement at times, for example when there is a comment on a sentence or paragraph and that sentence/paragraph is substantially revised and moved due to other comments.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

The process has become more rigorous over time. References to material in the underlying chapters ensures that the synthesis report is supported by the assessed literature.

2g. Adoption of report by the IPCC plenary

The process is reasonable. Government representatives in the plenary can only change the Summary for Policy Makers. The contents of the chapter and the technical summary remain the responsibility of the authors. The Lead Authors are present to ensure that proposed changes to the Summary for Policy Makers are consistent with the content of the chapter and hence the literature. Difficulties stem from differences in the positions of governments.

2h. Preparation of any special reports

The IPCC has at times, in my opinion, strayed into creating literature rather than assessing literature. I am thinking particularly of past special reports on emissions scenarios that generated “IPCC scenarios” rather than assessing scenarios in the literature. The last special report on scenarios, in my view advanced the state of the art for such work by marrying storylines with quantitative values, using several models to generate results for each scenario, and other innovations. Nevertheless the scenarios were criticised for using market exchange rates rather than purchasing parity exchange rates; a criticism that had virtually no impact on the results. I believe the current report on scenarios will assess, rather than generate, scenarios.

3. What is your opinion on the way in which the full range of scientific views is handled?

My experience is that Lead Authors make a conscientious effort to assess the full range of scientific views reflected in the literature. They don’t want to be embarrassed professionally by producing a weak draft. Then two rounds of review provide lots of opportunity for others to raise matters they believe are not well reflected in the draft. Experts and government officials whose views differ from the scientific mainstream have an incentive to submit comments that reflect their views. In short, I think the review process creates an opportunity and an incentive to inject views not already reflected in the drafts prepared by the Lead Authors.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Some governments treat the IPCC seriously while others largely ignore it. This varies by country and over time for a given country. Governments that treat the IPCC seriously try to nominate their best scientists as Lead Authors, provide support for the Lead Authors and the IPCC, and organize extensive peer and government reviews of the drafts.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

A vast amount of literature is reviewed. As noted above to address some of the policy topics it is necessary to use non-peer-reviewed literature. My experience is that Lead Authors rely on peer reviewed literature where possible, use non-peer-reviewed literature carefully, and sometimes try to get material published in peer-reviewed journals during the IPCC process. The problems due to use of non-peer-reviewed literature are negligible given the amount of literature assessed.

My experience also is that the IPCC has made an effort to draw on literature available only in

other languages even though its reports are in English. Restricting the use of non-peer-reviewed literature may disproportionately reduce the non-English literature that can be cited.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

This has improved over time. Steve Schneider and Richard Moss developed the current system which was first implemented for the Third Assessment Report. Although the text becomes a little cumbersome at times I think the result is a more precise assessment. Application of the uncertainty characterization, I think, is easier in the material covered by Working Groups I and II. The literature on policy instruments does not lend itself to such characterizations as easily, but I would not change the mandate to try to characterize the uncertainty.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

My impression is that the IPCC treats alleged errors seriously. But it can take time to identify the alleged error and assess its implications. By that time the press may have lost interest. The recent error of Himalayan glaciers melting by 2035 was relatively easy to identify. In my opinion the press coverage was not sufficiently clear; the message should have been – the date was wrong but it does not change the basic conclusions of the report and we will review our processes to minimize the chance of future mistakes.

The alleged mistake relating to the use of market exchange rates rather than purchasing power parity exchange rates was more difficult to address. Technical arguments can be made for use of both sets of exchange rates. All of the available models used only market exchange rates. The Lead Authors engaged, with limited success, in a technical discussion of the issue with the critics. At least one model was restructured to allow the use of both sets of exchange rates. The result was a negligible difference in the scenario. But the process of engaging in the technical discussions, revising the model and re-running the scenarios took quite some time (probably about a year). By then the press has no interest.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The IPCC gets good coverage for its major reports. When criticized, it does not do such a good job, but I don't have specific recommendations on how to correct that.

The recent criticism over the errors about melting of Himalayan glaciers and the portion of the Netherlands below sea level and the earlier controversy over exchange rates have no serious consequences other than to raise doubts about the credibility of the IPCC.

During the Second Assessment Report David Pearce, a respected environmental economist and a Convening Lead Author, was personally vilified in the press leading to a sit-in at his office because a few individuals managed to get press coverage for their distorted interpretation of the meaning of a technical term (the value of a statistical life).

I understand, but am not familiar with the details, that as a result of his work for the Third Assessment Report Ben Santer was personally maligned and professionally disparaged by critics who distorted part of the IPCC work in the press.

In my opinion such personal attacks stemming from IPCC participation, although rare, are extremely serious. Unfortunately I don't have any recommendations on how to prevent their reoccurrence.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The IPCC relies on the willing participation of experts and voluntary funding by governments. If governments decide the process is not worthwhile funding and the IPCC will quickly disappear.

A more serious concern, at least for Working Group III, is the participation to the most highly respected experts in the field. The calibre of the participants has been declining. For the Second Assessment Report, the WG III policy chapter had a Nobel Laureate in economics (Kenneth Arrow) and a future Laureate (Joseph Stiglitz). For the Third Assessment Report, the WG III policy chapter had full professors of environmental economics and law from three prestigious universities – Peter Bohm, Stockholm; Thomas Heller, Stanford and Robert Stavins, Harvard. For the Fourth Assessment Report this had fallen to one full professor of environmental economics – Charles Kolstad, UC Santa Barbara. Unless the trend is reversed, that part of the IPCC report will lack stature and credibility.

A similar trend can be observed in the stature of the IPCC Chairs. I don't know if it applies to all working groups and chapters.

Occasionally it has been proposed that the Working Group reports appear sequentially. Often implicit in that suggestion is the presumption that the IPCC will produce emissions scenario, which will be used in climate models (that will form part of the WG I report), whose output will be used to assess impacts (that will form part of the WG II report), that can be used to assess adaptation options (also WGII) and mitigation options (in the WG III report). I think that suggestion is a bad idea. It would move the IPCC into doing an assessment rather than assessing the literature. Getting peer reviewed literature at each step in the process would take a lot of time and coordination. And the literature generated in this manner would only be part of the literature relevant for an assessment of the science.

An alternative to the IPCC is to request national science academies to conduct similar assessments. This has been done in the US and could be done with the participation of more national academies. The drawbacks of that approach are less government "ownership" of the report and a smaller role for developing country governments. It is unlikely that such a structure would have a Summary for Policymakers negotiated by government representatives. Few developing countries have national academies of science, so developing countries would play a smaller role which would diminish the influence of the report on international negotiations.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead Author, reviewer, contributing author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

If this question refers to the policy questions discussed in the Synthesis Report then I am unaware of the process by which they were reached. Perhaps this process should be better communicated as I probably should be aware of this. By specific design, the main assessment reports do not address specific policy questions. Their purpose is to assess our scientific knowledge in order to inform policy.

2b. Election of Bureau, including Working Group chairs

This seems to have been handled reasonably well over the years.

2c. Selection of lead authors

This also seems to have been handled well over the years. I think it is most important for the working group chairs and vice-chairs to have a certain amount of control to determine who is selected in order to ensure that topics are covered well. Over the years, there has been some flexibility to allow an additional Lead Author to join a chapter if needed.

2d. Writing of working group reports

I have been involved in the writing of a number of chapters over the years. In my view, the writing process has always been exceptionally thorough, collegial, comprehensive, timely and rigorous. It has, and continues to be, very rewarding as a scientist to be involved in this process.

2e. Review processes

The review process is very comprehensive. However, as it stands, pretty much anyone can review the working group reports. While inclusion is important, it is becoming impractical to deal with the thousands of comments. I would suggest that the review process should be modified slightly so that 1: Governments can nominate reviewers (the government review

process): 2: The InterAcademy Council can nominate reviewers (through their member organizations; InterAcademy review); 3: A small review team should be appointed to nominate reviewers for each of the chapters (Expert Review). The purpose is not to limit the review but to provide some assessment as to what is defined as “Expert” in the expert review portion.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

The synthesis report in the AR4 was excellent. It was much better than the TAR Synthesis report. I would consider following the AR4 model again. The Summary for Policy Makers (SPMs) are really not written in a language that is readily accessible to policy makers and the general public. I think it is here that we could make some improvements. The SPMs should try and include less jargon.

2g. Adoption of report by the IPCC plenary

This process really has got to change. The requirement of unanimous line-by-line approval of the summary for policy makers by member states is very disruptive and can undermine the scientific process if special interests become involved. There has been some legitimate criticism of the IPCC process regarding certain member states attempting to water down some of the conclusions in the summary for policy makers in final plenary. I would suggest that the completed reports be given to the IPCC once they have been finalized by the Working Groups. These reports would have fulfilled the tasks that the various Working Groups were assigned to do. Only points of clarification should be raised at final plenary. Any other issues should have been raised in the government review process.

2h. Preparation of any special reports

While these are valuable, one has to be careful not to burden the scientific community with too many of these reports. They are extremely time-consuming to produce.

3. What is your opinion on the way in which the full range of scientific views is handled?

The IPCC chapters are not policy prescriptive (where individual views can play a role) but rather address what the published scientific literature has established as our understanding of a particular process or phenomenon. All published research is examined. Where there is legitimate uncertainty, we are careful to add caveats and uncertainty to our discussions. If anything, the IPCC process leads to an overly conservative assessment of our understanding of science.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The governments are involved in nominating potential Lead Authors and reviewers as well as in the approval of the Summary for Policy Makers. I have never witnessed any government interference with any aspect of the writing of the main body of the assessment reports. However, there is too much government involvement in the final plenary where the summary for policy makers is approved. Special interests have sometimes surfaced and disrupted the approval

process. Many government delegates have little expertise in the area of climate science. The overwhelming majority were not involved in the writing process. I do not think the summary for policy makers should be approved on a line by line basis unanimously by all parties to the IPCC. This has the potential of watering down the findings of the assessment report.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

My experience is with Working Group 1 and I have never perceived there to be a problem with our referencing. The overwhelming majority of our references are to peer reviewed literature. We also need to reference occasional technical reports that describe certain models or methods.

Working Groups 2 and 3 make more reference to non-peer reviewed literature but that usually occurs in the case where one is trying to provide a citation to demonstrate societal relevance for some issue. These Working Groups may need to be especially careful with referencing.

The IPCC assessments are very inclusive and include a comprehensive analysis of all existing literature and available data.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I am very satisfied with the handling of uncertainty, and I like the “likely”, “unlikely”, “very unlikely” terminology when statements are included in the assessment component of the chapters. We may see evolution to including more formal probabilistic statements in the next assessment report since there have been rather substantial advances in this regard over the last few years.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The data quality assurance and quality control for Working Group I was exceptional. The IPCC also issues errata on a timely basis. When WGII makes statements on projected changes in the climate system, care should be taken to cross check with the appropriate future projections chapter in WGI. Such a communication would likely have caught the error in projected melting of Himalayan glaciers.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

At the institutional level, the IPCC has done, and continues to do, a very poor job communicating with the media and the public in general. This has been left up to individual scientists and is very ad hoc. Scientists are simply “out classed” and “out gunned” when it comes to communicating with the media and the public about their science. They are up against think tanks, public relations firms, and highly-organized groups manufacturing doubt within the

general public. In light of the vested interests involved in very public climate policy discussions, and the politicization of global warming in general, I would think it imperative that the IPCC seek the services of a professional public relations firm to ensure that the important results contained in the IPCC assessments are communicated effectively.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The AR5 should be the last formal, all-inclusive assessment. There is simply too much scientific information becoming available to assess all of climate science effectively. In addition, it is important to bring the three working groups together around specific issues. I suggest that in the future, the IPCC should focus on the production of timely updates on particular policy-driven questions. For example, one could imagine interdisciplinary reports aimed at addressing:

- 1) How much will sea level rise this century and what will be its effects.
- 2) What are the allowable future emissions that will keep the rise in Earth's temperature below 3°C, and what are the social and economic ramifications of these allowable emissions pathways.
- 3) What will be the consequences of increasing ocean acidity?

There are obviously many more. I am suggesting that the IPCC evolve in the future to develop assessments about specific questions rather than climate science as a whole.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Scientists involved in the IPCC, either as Working Group Chairs/Vice-Chairs or as Lead Authors, do so in a voluntary capacity. It is important to have consistency within the IPCC process so that there is an internal "memory" within the IPCC management system. In addition, I believe that the IPCC needs to be better funded to allow it to employ a better communication and public outreach strategy.

11. Any other comments

N/A

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Coordinating/Lead Author for some special reports

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

The strengths of the IPCC processes is the openness and inclusiveness of all governments and the engagement of the scientific community as well as the private sector (e.g. in the preparation

of greenhouse inventory guidelines for industrial processes and product use, the working group relied heavily on the private sector/industry to get the relevant information)

- 2a. Scoping and identification of policy questions*
- 2b. Election of Bureau, including Working Group chairs*
- 2c. Selection of lead authors*
- 2d. Writing of working group reports*
- 2e. Review processes*
- 2f. Preparation of the Synthesis report, including the Summary for Policy Makers*
- 2g. Adoption of report by the IPCC plenary*
- 2h. Preparation of any special reports*

3. What is your opinion on the way in which the full range of scientific views is handled?

Transparent and inclusive

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments nominate experts, they are engaged in the review and approval of all IPCC reports and therefore has the ultimate responsibility for the reports IPCC produces

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Certainly if IPCC can depend only on peer-reviewed literature so much the better, but there some national reports that published that also relevant for the IPCC process but may not be peer-reviewed. In my view the IPCC should use both peer and non-peer reviewed literature but experts and governments must assess these literature against current knowledge.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

IPCC has a robust characterization and handling of uncertainties, the current approach should be maintained.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

All literature including data are duly taken through QA/QC processes through the elaborate review processes that IPCC has. Certainly the handling of errors detected after publication are communicated to all governments and relevant stakeholders and I think they rightly handled.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Extra effort is needed in terms of communication to the general public using the media. It will be important that IPCC uses to the extent possible national broadcasting stations and international networks to disseminate its reports.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

There is the need to include young scientist and therefore IPCC could have a close collaboration with tertiary institutions in both developing and developed countries to recruit some additional experts. Nominations from Government alone are inadequate to meet the needs of the IPCC.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Coordinating Lead Author, Lead Author, Contributing Author, participant in Scoping meetings. Also Lead Author of special reports

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

The Report Comments: The process of deciding the contents begin with the Chapter titles approved by the IPCC Plenary for the three Working Group reports. I believe this is good since, while it provides guidance about the coverage of the reports, it still leaves the room for details to be worked out by the experts

Selection of Experts: The process of selecting the experts (and other participants to the scoping meeting, including Government officials) is however non-transparent. Although, I have been invited to scoping meetings of last three assessment reports, it has never been clear as to how the selection has happened. My observation is that, with time, the process has become more opaque and this has often raised doubts as to whether invitations are due to ‘connections’ with IPCC Bureau members or official positions. In some cases, it is not the competence but the ‘soft and accommodative’ behavior has been the criteria for selection. This is also mentioned to me by some bureau members, albeit privately, that some names were not included for similar reason for AR5 scoping meeting, however were included finally due to ‘insistence’ by some members. The committee should look into the ‘openness’ and ‘fairness’ of the process of selection of experts for the scoping meeting and advise IPCC to have a more ‘fair, open and transparent’ process.’

The North-South Divide: The scoping meeting reflects serious north-south divide in terms of proportion of regional representations of authors, emphasis of content and involvement (and authority) of Bureau members and WG Co-chairs. This issue is manifesting more seriously in recent times and was really at worst in AR5 meeting. To an extent the perceptions exists as to the ‘rents’ accruing to IPCC officials, especially at the top echelon, in the selection process of experts and also Government officials. IPCC is a scientific body and such process starts the rot which ultimately brings in incompetence and nepotism which de-motivates scientists and compromises the scientific excellence of the reports. The committee should look into: a) the author profiles and find what was the representation of experts in AR5 scoping meeting in Venice in terms of developed and developing country experts and also in terms of experts from USA versus rest of the world (especially developing countries), b) why experts from institutions where some major IPCC officials are affiliated are getting representation significantly more than others in terms of author selections (regardless of their CV), and c) whether developing country themes are getting adequate attention that it deserves in terms of scientific and policy value of the IPCC reports.

2b. Election of Bureau, including Working Group chairs

While I have not been involved in process of ‘Election of Bureau’ members, I have good information on the process due to my long association with officials and scientists engaged with the process. The present process, I believe, is too political to select the leadership which has scientific excellence. The Committee should recommend the process which ensures that the top IPCC leadership is selected from among those who have made significant academic contributions in the key areas of the three Working Groups. Only such leadership can inspire confidence from among the scientific and research communities engaged in preparing IPCC reports.

2c. Selection of lead authors

The observations I have made regarding the selection of scoping meeting are also relevant here and therefore I am not repeating the same. Since I have been selected for several IPCC reports, I have no personal prejudice (or grouse) on the process. However, regarding the selection of Lead Authors, I am more worried since the distortions, opaqueness and arbitrariness that is lately creeping into the process seems alarming. It seems that knowledge and scientific contributions are increasingly at discount in selection of authors compared to the personal connections, affiliations and political accommodations. This trend needs to be reversed if the excellence of IPCC as a Nobel Peace Prize winning organization is to be restored. The committee should look into the AR5 selections and ensure that these are done based on CV value, with some minor adjustments to accommodate regional and gender representations. Wherever it would appear that the scientific excellence is being compromised, the committee may make suggestions to include more authors, if needed, to ensure scientific excellence of IPCC reports which are increasingly used for scientific and policy community. A waiting list of lead authors should be maintained so as to ensure that the next level of selection, in case some lead authors refuse to become lead authors, the positions are not filled-in surreptitiously, but by a transparent formal process.

2d. Writing of working group reports

The writing process needs to be more closely monitored and coordinated. In the present process, there are four meetings where the IPCC Authors primarily meet. Many authors are absent and also some hardly contribute. The report therefore is finally prepared by a few and at the end 'fixed' by the respective TSUs. This process in fact takes the toll of representation argument, a main reason for which the lead author selection is distorted to begin with. The committee should look closely at the AR5 process and may advise IPCC to have more author meetings, closer coordination among authors, reduce (if not eliminate) free-rider effect (by lead authors as well as IPCC officials).

2e. Review processes

The Review Editors (REs) come in the process too late. Their clout is lower since most of these are considered to be those who were not found to be not good enough to be selected as lead authors. Many originally selected REs therefore refuse to accept the assignment. The review process thus lacks from credibility of individuals and delayed entry of the REs. The Government review process is political, rather than scientific. However, some Governments make very good effort and therefore the Government review process must be continued. The time given for Government Review is too short, given the importance of the process. Since the external reviewers service is provide 'gratis', the reviews are sketchy. The committee may look into the present AR5 'Review Process' and ensure that: i) the REs are given more clout, ii) they are introduced earlier, iii) Government review is given more time and iv) at least some external reviewers elected and are 'rewarded' economically or by due recognition to make their reviews more comprehensive and professional.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

The Synthesis Report is the apex document of IPCC Assessment Reports. It therefore deserves very serious consideration in terms of process and content. Since AR4, it seems the 'Synthesis Report' process is made much more opaque to all, including the CLAs of the respective Working Group reports. The TAR Synthesis report, for instance, included all CLAs as authors of the Synthesis Report. In AR4, the process was altered without any information to CLAs. Some CLAs were excluded whereas some others, who were only LAs, were chosen for no evident or explained reasons. The process was consolidated in the IPCC Chairs office with some professional staff and IPCC within Chair's affiliating institution. Several CLAs who originally played key role in preparing the working group assessment reports thus became 'outsiders'. This not only made the Synthesis Report a mediocre document but also report which many CLAs had no 'ownership' to defend. The committee should seriously look into the Synthesis Report process to make the author selections process more transparent, less dependent on IPCC Chair's office (and his affiliating institution) and restore due involvement of CLAs.

2g. Adoption of report by the IPCC plenary

This process needs considerable re-look since the policymaker's summary finally pass via the process of 'attrition' than 'reason'. The time management of the process is poor, at best. The

dialogue is more political than scientific. The summary of policymakers therefore come out as a very diluted (and compromised) document. The committee may advise IPCC to improve the time-management of the plenary process and also in the interest of transparency to have the process recorded and put it on the IPCC website.

2h. Preparation of any special reports

The special reports are technically very important since they cover the emerging themes where scientific literature is still emerging. Since the funding seems to be constraining the IPCC from making more Special Reports, the selection of themes of Special Reports needs greater attention. IPCC may prepare the portfolio of important themes and select those which are best in terms of scientific and policy needs within the financial constraints. The technical competence of lead authors, in the specific technical area of the special report theme is very important. Regarding LA selection process though, the present IPCC process has lacuna very similar to those explained by me above (and therefore I am not repeating these). The report preparation of special report is often less serious than the Assessment Reports which are more under the ‘Government and Public Eye’. The committee should ensure that a portfolio of themes for the special reports is proposed by IPCC using a formal procedure involving experts and which special reports should be pursued and why is decided via a transparent process.

3. What is your opinion on the way in which the full range of scientific views is handled?

The IPCC authors do very well the assessment of ‘mainstream’ literature. However, the published literature originating from many developing countries or non-English language literature (other than from European and Japanese languages) is not diligently covered. The committee may advise IPCC to work more conscientiously to include such materials and recommend that IPCC officials should remind and exhort the authors to look beyond the ‘mainstream’ literature.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments role should be limited to oversee the functioning of IPCC Bureau and the overall coverage and processes for preparing the reports. The Governments should keep hands off on scientific assessment, including the official Government reviews. Governments though may have the role in suggesting independent reviewers who can review the assessment reports. The committee may recommend the Governments to play a facilitator role and not the ‘supervisors’ or ‘judges’ of scientific information.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Please see answer to point 3 above.

6. What are your views and suggestions regarding the characterization and handling of

uncertainty in each of the working group reports and the synthesis report?

Uncertainty assessment is one area where, I believe, IPCC went overboard in AR4. The subjective probability assessments are often very attractive, but have little basis. Often the scientific experts are not good at probability judgments since their opinions may be swayed by own limited experiences or biases of own results. While, I believe that probability judgments is valuable, however the IPCC, if so desires, must follow a formal process of assessing 'subjective probability' as well-known in 'decision analysis' literature. The AR4 process of subjective probability assignment was very ad-hoc and did not follow the formal assignment of probability ranges such as for categories such as 'likely', 'very likely' etc. Hence, the probability assignments in the Working Group reports, I believe, may have been biased due to inferior probability assignment process, though not due to any systematic or deliberate attempt to introduce the bias. The formal probability assignment process should have been validated during the parallel Synthesis Report preparation process, but this seems to have been missed during the preparation of AR4 Synthesis report. The Committee should advise IPCC to avoid ad-hoc and opaque probability assignment process and use the formal process or else not report the uncertainty using the quantified probability range assignments.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Since long IPCC did not face such a situation since IPCC reports were not used widely and had limited scientific and political influence. Also, during the earlier stages IPCC process was more science oriented and less politically influenced. Therefore, data quality assurance and quality control and identification and rectification of errors was more rigorous. I believe that till late IPCC had done excellent job in these regards and also in defending own assessments or owning up and rectifying errors. In past some years though, IPCC seems to have been a victim of own large image and the IPCC leadership seems to have started to believe that the 'scientific truth' is inherent quality of (or an end product of) the IPCC report, rather than its revelation (for policy purposes) being the prime reason for the existence of IPCC and its Assessments. The Nobel Peace Prize, instead of making IPCC (leadership) more modest, seems to have inflated them in believing itself as a champion discoverer and an advocate. However, I believe the IPCC is a very sound scientific organization and can correct itself, given sound and excellent scientific leadership which has less political maneuverings tendencies. The committee may advise the IPCC to therefore focus on science and advise the Governments to permit less political motivations in IPCC functioning.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I believe traditionally IPCC has done very good job in communication with the media and general public. Recently though, the IPCC leadership did a poor job of this, especially in case of the error related to melting of Himalayan Glacier. However, I think this was an anomaly. The Committee though may ask IPCC to create more robust and formal processes for communication with the Media and the Public and advise the IPCC leadership to remain confined to science and avoid rhetoric.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I believe that IPCC is an excellent model of how scientific literature should be assessed in the interest of policymaking to deal with emerging issues concerning global public interests. However, I do feel that the IPCC lately has become less scientifically oriented and this trend must be reversed. The committee may consider a model with less top heavy bureaucracy, processes that are more transparent and free of influences and wherein the science regains the command.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

IPCC management and secretariat had become too bureaucratic. It seems that IPCC has become victim to the same malady, as some other international organizations, wherein enlarging and sustaining the administration has become the main motivation rather than pursuing the original motivations and basic tasks of the organization. The committee may propose to create an overseeing organization and periodic review of IPCC, just as what this committee is doing, but at intervals like every 5 years.

11. Any other comments

IPCC leadership needs very serious and urgent introspection, correction and also advise. Also, the changes in the IPCC bureaucracy, including the Bureau (starting at the top) is essential for IPCC to regain its image, in the interest of urgent need for the global humanity to deal with the threat of Climate Change. The world cannot afford losing a great and unique scientific and policy initiative like IPCC. The committee therefore should recommend making the ‘clean cut’ and ‘urgent’ changes rather than waiting for too long. It may be then too late.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Coordinating Lead Author, reviewer

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

I can say that for WGI in AR4, this was not a major concern to the Lead Authors (LAs), in the sense that we knew generally what the policy concerns were, and we knew the science, and we were given the chapter assignments, with a topic and a page limit for each chapter. Then the LAs on each chapter team decided themselves how to allocate that space to the various aspects of

science to be assessed. We could have done this allocation with any reasonable chapter assignments. Thus the scoping and identification process was one in which we played no role, but which produced a template that we could easily work with.

2b. Election of Bureau, including Working Group chairs

The bureau election process is mysterious to most LAs, and the contact of the LAs with the bureau is minimal. The bureau is not involved at all in actually writing the main report. However, the choice of working group co-chairs (Susan Solomon and Dahe Qin for WGI AR4) is absolutely critical. Our report is excellent, and these co-chairs were a major reason for that. Often Susan Solomon is mentioned more prominently, in part because she is a native English speaker and thus more visible in the western press, but in fact Dahe Qin deserves equal credit. Both co-chairs were superb. Again, most LAs probably don't know how these two people were chosen, but the result was excellent for WGI AR4, just because these two people were such good scientists and so dedicated to the task. Incidentally, at the start of the AR4 process, neither of them was primarily a climate scientist. Susan Solomon was a well-known atmospheric chemist and spectroscopist, and Dahe Qin had long been a senior science administrator. But they were smart and hard-working and good at coordinating the large group of LAs who wrote WGI AR4. During the 3 years that it took us to write the report, these two obviously learned a lot of climate science from us climate scientists and from the process of writing.

2c. Selection of lead authors

The selection process of picking the LAs from the nominations is not at all transparent. How the nominations are made by governments is also a somewhat mysterious activity. Perhaps any such process involving subjective judgments cannot be transparent. It's like hiring a university professor from a short list of ten candidates: there's no way to prove the choice was optimal. Clearly, a number of diversity criteria played a role. In WGI AR4, my judgment is that about 20% of the authors did very little, but the 80% who actually wrote the report were excellent. The 20% included some lazy people who just wanted the honor of being an LA without the chore of actually doing the work. It also included a few people at the end of their careers who were being recognized for earlier good work. But the fact that so many of the LAs really wanted to work hard and did so well is amazing and exceeded my expectations. I think it is noteworthy and praiseworthy that the great majority of LAs for WGI AR4 had not been LAs previously for earlier IPCC reports. I think this may have been less true in WGs 2 and 3.

2d. Writing of working group reports

This was a very pleasant and harmonious process. The IPCC hierarchy (everybody above the level of working group co-chairs) fortunately played no role in the writing of WGI AR4 and did not attempt to play a role. The LAs were free to write their chapter as they saw fit, with no outside interference of any kind. The degree of commitment and willingness of the LAs to work as a team was gratifying. This was an example of scientists being completely altruistic, working long hours with no compensation, putting their own research and other responsibilities aside, and using their best scientific judgment and expertise to produce the most high-quality assessment they were capable of. As in all my answers, my knowledge extends only to WGI. In fact, the 3

working groups were essentially sealed off from one another, so we had no idea what WGs 2 and 3 were doing. I consider this a weakness of the IPCC process. The small number of rather trivial errors found in AR4 are not in WGI, but they had to do with the physical climate system, which is the domain of WGI, and I think we WGI authors would have quickly spotted them if we had reviewed the drafts or otherwise been included in the WGs 2 and 3 processes. Obviously, there is some physical science vs. social science snobbery in play here, just as in universities. We physical scientists in WGI tend to think that we are the “real scientists” in IPCC and thus quite superior to the WG2 and WG3 people. This is hopeless arrogance.

2e. Review processes

This is quite time-consuming but worthwhile, and I think it works well and is transparent, with reviewer comments and LA responses posted to a public web site. Parenthetically, I think that some of the WGI Review Editors did very little and basically neglected their jobs. But the authors themselves were very conscientious. Once again, I refer to WGI only.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

These are two different things. The SPM is done before the SR, so it may be somewhat misleading to speak of the SR including the SPM. I have no personal knowledge of the Synthesis Report process and will not comment on it. The WGI SPM draft was prepared by a subgroup of LAs and the WGI co-chairs. This process was harmonious and was time-consuming, but not really difficult. The main problem with the WGI SPM, in my opinion, is that it is not easy reading and is probably far too technical and too crammed with jargon and facts, when the limited science backgrounds of the intended readers are considered. This is true of the Synthesis Report too. This is a prime example of my main criticism of IPCC, which is that it does a wonderful job of science assessment but a mediocre job of communication. The reason for this is not at all mysterious. The co-chairs and LAs are chosen for scientific excellence. They are first-rate scientists, in general. None of them are professional science communicators. Nearly all of them are not well-informed about what professional science communicators can do. Most LAs and both WGI co-chairs think the SPM is quite readable. In fact, governments were polled at the start of the AR4 process and asked what they thought about the SPM of WGI of the TAR (Third Assessment Report, in 2001). They overwhelmingly responded that it was much too technical and too hard to read. If anything, the SPM of WGI AR4 is even worse in these respects. This will not change unless and until IPCC makes improved communication a priority and hires a team of first-rate professional science communicators. This will involve spending significant money, because these people, unlike the LA scientists, do not work for free. IPCC has shown no sign of any interest in doing this, and several governments would surely be opposed, because clear communication of climate change science is the last thing that several governments would like to see IPCC do.

2g. Adoption of report by the IPCC plenary

As a CLA, I was present for all of the WGI AR4 plenary in Paris in early 2007. Although it was extremely time-consuming and sometimes excruciatingly boring, because several of the government representatives loved to hear themselves talk, it was basically a constructive process.

Veterans of previous WGI plenaries told me that the obstructionist policies of some governments (such as the U. S. and Saudi Arabia) in the earlier SAR (Second Assessment Report, 1995) and TAR (2001) IPCC plenaries were much less in evidence this time. For WGI AR4, perhaps only China was consistently unreasonable, in wanting to dilute the scientific findings and to over-emphasize scientific uncertainty. However, in this plenary, China typically would first make its point and then defer to the wishes of the great majority of countries. In the end, the SPM finally adopted did closely resemble the draft prepared by the scientist authors. It was fully consistent with the main report. The CLAs were present at the plenary to make sure that the integrity of the science assessment was preserved, and they were successful. Once again, I am speaking only about WGI. I have no first-hand knowledge of what happened in the other two plenaries, but hearsay and rumors give the strong impression that they were much more contentious.

2h. Preparation of any special reports

I have no knowledge of this.

3. What is your opinion on the way in which the full range of scientific views is handled?

A great deal of nonsense has been written on this topic. Elements of the press are to be faulted, as are some scientific “contrarians” or “skeptics” who complain vociferously that their views were not sufficiently taken into account. In fact, the WGI authors in AR4 clearly were careful and conscientious to cite many non-mainstream papers by skeptics and contrarians, including numerous papers which frankly are of little value, as well as quite a few that are demonstrably wrong. Science evolves, obviously, and it is always incomplete. Where research remains to be done, and questions are still unanswered, and differing views exist, WGI AR4 says so. The role of ice sheets in future sea level rise is a prominent example. Where the research frontier has moved on, however, and a strong consensus exists in the expert community, WGI AR4 says that. People whose research has essentially been rejected by the expert community, or shown to be seriously flawed, can understandably resent that finding, and many of them will never admit their failings. That is just human nature. However, IPCC is charged with assessing research, not simply cataloguing it. Reaching a reasoned expert judgment is the very essence of the IPCC task. IPCC’s track record is extremely good in this respect. In particular, IPCC has been shown to be often too intellectually conservative in retrospect, in the sense that research since the papers assessed for WGI AR4 has in many cases demonstrated that anthropogenic climate change is happening more severely or more rapidly than AR4 states or projects. See for example, the 2009 online report *The Copenhagen Diagnosis*, available at www.copenhagendiagnosis.org. This is not an IPCC report, but rather an update prepared by 26 climate scientists, about half of whom are IPCC authors. Several other non-IPCC reports between 2007 and 2010 have shown that AR4 has underestimated the severity and rapidity of climate change in several important instances. Perhaps the LAs’ tendency toward excessive deference to skeptic or contrarian views has played a role in this phenomenon, and that possibility deserves further study.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I don’t think my views would be useful, because I think the governments are absolutely in charge

of the IPCC process and clearly want to control it themselves and will continue to do so. One could imagine a scientist-controlled Panel, an SPCC, but it is not going to happen. The great advantage of the current government-controlled IPCC is that the governments cannot easily reject the IPCC findings after the fact, because they defined the entire process and participated actively in it. As a prime example, every word of the Summaries for Policymakers has been unanimously approved by all governments. The price paid for this government buy-in can be steep, but that is just a fact of life.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Every working scientist knows that the peer-reviewed literature contains a lot of sloppy and weak and erroneous research. Poor papers get published every day. Peer review in practice is in fact a very low bar. Much of the public and the press have seemingly arrived at the incorrect view that peer review is some sort of guarantee of high quality. I think the LAs ought to be granted the authority to decide for themselves which papers are valuable and which are not. It's part of the assessment process. If the LAs want to cite gray literature, they should be allowed to do so, provided that they state the case, in each instance, saying why they have concluded that a given non-peer-reviewed source is trustworthy and significant and essential to the assessment. Obviously, the great majority of IPCC citations will be to the peer-reviewed literature, but there should not be a blanket policy forbidding any mention of gray literature, which certainly is valuable in some instances.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I think in WGI AR4 this was done thoroughly and consistently. We put a great deal of emphasis on this topic, as anyone who reads the report diligently will see. The contrast with the TAR is striking.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The fact that errors were found, although few in number and minor in significance and not in WGI AR4, means that the process can be improved. My candid view is that it is amazing that a 3,000-page report compiled under intense pressure by fallible human beings has been so nearly free of errors. The telephone directory of a major city is of comparable size and surely has far more errors. This topic is greatly overblown, in part because IPCC responded to the discovery of errors in such a clumsy and unprofessional way.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

IPCC communicates poorly, as I have stated earlier. Only a complete abandonment of its current policies and procedures can help it. Dr. Pachauri, who had nothing to do with writing AR4, is not

skillful (to say the least) at communicating climate science, in part because he does not come from this scientific field and does not know the subject in depth. The IPCC web site is hopelessly clunky and amateurish. IPCC is inept in dealing with criticism and negative publicity of all kinds. It understands nothing about pro-active crisis management or media relations. IPCC failed utterly to respond quickly and adequately to the discovery of minor errors in non-WGI AR4. It ought to have put a correction and errata page on its web site instantly and then immediately notified the press and governments. As another example of inattention to the communication challenge, during the writing of AR4, IPCC at the co-chair level strongly discouraged the LAs in WGI AR4 from hiring a professional science writer to edit and improve the FAQs, and the LAs prevailed and hired one only after strongly insisting to the co-chairs that this was necessary. The co-chairs were wrong, in retrospect, and the FAQs greatly benefited as a result of the LAs' perseverance in this case. One fact that must be faced is that a professional science assessment effort is cheap, because the scientist LAs work for free, but a high-quality professional science communication effort will cost millions of Euros or US dollars. I am convinced that the influence, on policymakers and the public, of the IPCC assessment reports is greatly reduced, because IPCC simply does not understand the importance of excellent communication and lacks the expertise and the will and the resources to communicate well.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I am greatly concerned that the current model is unsustainable. It produces serious burnout in the research community and consumes valuable resources for tasks such as running the SRES scenarios with high-resolution global climate models (GCMs). It is doubtful whether this rather routine task of running the scenarios, which is undertaken only because IPCC asks for it, is an optimal use of skilled GCM scientists and massive supercomputer power. In short, the current IPCC model places a severe burden on the research community. I do not have a closed mind on how best to improve the process, but I would first propose abandoning the preparation of massive and partly redundant overall assessments like AR4 every six years, in favor of doing specialized reports on topics where rapid research developments have occurred or where policymakers clearly need specific kinds of scientific input.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

One could start by accepting the principle that IPCC must be headed by a widely respected expert in climate science with strong leadership credentials in relevant international scientific organizations. Bert Bolin, the first person to hold this job, is the prime example and should be the role model.

As I have stated earlier, great attention needs to be given to improving IPCC's ability to communicate much better to all its audiences. This will first require governments to agree to the importance of this function, which will not be easy. It will then require identifying and hiring and paying for a team of first-rate professional science communicators, including media experts, web designers, journalists, science writers, translators, graphical design experts, etc. Having too few people, or second-rate people, will guarantee failure. These people must then be integrated

carefully into all aspects of the IPCC assessment process, not simply brought in at the end and told to take the IPCC reports and communicate them. This is really a recasting of the IPCC mandate, and it will also require many climate scientists to realize that communication is absolutely critical and that very few scientists are good at it. Many climate scientists surely think that the science community has already done its job magnificently. It did superb research on climate change, and it enthusiastically worked with the IPCC, which carried out and published assessments, culminating in AR4 and its Summaries for Policymakers and Synthesis Report. In fact, these IPCC documents are virtually unintelligible to non-scientists and are largely ineffective in communicating science to a broad audience. Very few climate scientists are aware of this communications failure. The climate science community must learn to accept this reality, and it must then participate in the major task of correcting IPCC's communications shortcomings.

11. Any other comments

Please make public all the redacted inputs you receive from questionnaires like this one. That is, please remove identifying information as to who wrote the responses, and then put all the uncensored but anonymous responses and verbatim comments on a public web site.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

CLA, LA for a Synthesis Report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

I am pleased with the current procedure.

2b. Election of Bureau, including Working Group chairs

No suggestions

2c. Selection of lead authors

Geographical balance and rotation are the strong features of the process. However, in my opinion, representation for EIT countries ought to be larger. I also think that nomination of candidates for IPCC should, to some extent, be based on recommendations from the professional community, not only on self-promotion and government support. This may be especially important for countries where some outstanding scientists have some disagreements with their governments, so have little chance of being nominated by the latter for the IPCC.

2d. Writing of working group reports

Having been twice a CLA, I know that this process takes a lot of time. It might be very useful to have major recent publications on the chapter subject, as identified by LAs and TSU, “ready on the table” to minimize time and expenses for LAs for obtaining this information.

2e. Review processes

I am pleased with this process which really allows it to polish drafts at various stages. The only problem I faced with this is uneven distribution of questions to reply by chapters. Some chapters get too many questions to be able to address them in a set time frame and may need either some assistance or more time, than others, to handle all questions.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

I think the idea to have a Synthesis report is very productive. This practice should stay.

2g. Adoption of report by the IPCC plenary

This practice is quite difficult to go through, but amazing.

2h. Preparation of any special reports

I have never been involved in the preparation of any special report, so cannot comment on this process.

3. What is your opinion on the way in which the full range of scientific views is handled?

I think the review process takes care that LAs cannot ignore any scientific view, even those they do not share. However, it would be worthwhile to have a larger reflection of non-English-language literature.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I am pleased with the role they currently play. The only suggestion is that they may be more active in identifying policy-relevant issues.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Despite the willingness of IPCC to involve more non-English language sources into the process, still all chapters mostly rely on literature available in English. More effort is required to address this issue. As to the peer-review requirement, it came from the last century. Many studies today need to appear for public consideration ASAP. Peer-review process is time-consuming. Not avoid

waste of time, many excellent publications do not go through this process, but deserve equal reflection in the IPCC reviews.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I do not see many problems in how IPCC handles uncertainties, but there is a problem relating to how mass media read IPCC publications. They hate uncertainty, so just drop many uncertainty statements in IPCC publications, and public gets very certain statements instead. There is room for improving communications. Just one example: people understand allocation of lots of resources for military needs, often being very uncertain as to who and when is going to attack their country, but they require very certain climate change projections, as well as very certain climate mitigation or adaptation costs predictions.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

No opinion.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Here IPCC made a significant progress in AR4, but even more needs to be done. First, IPCC should more often come up with new results of its studies, not only when WG reports are finalized. IPCC may not only report on the results, but provoke some discussions and organize media coverage of those. Then it will more often appear in media with the privilege to reflect the opinions of the best scientists from different disciplines and regions. The Nobel prize status attracts the attention of mass media to any IPCC happening. Second, more public appearance is needed in countries where IPCC is not yet well-known. Third, IPCC may try to prepare not only summary for policy-makers (SPM), but also summary for person in the street (SPS).

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

When I started my work for the IPCC in 1998, I had strong doubts that this process was able to provide any consistent report. However, time has proved its effectiveness. So I think this model should stay.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

I personally would be pleased if each chapter CLAs could get more secretarial support from TSUs.

11. Any other comments

No other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Review editor. Also author of a technical report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

No comment

2b. Election of Bureau, including Working Group chairs

No comment

2c. Selection of lead authors

No comment

2d. Writing of working group reports

The output of WG 1 was not delivered in time to WG II.

The overlaps between different chapters of WG II were not very well managed. The major conclusions were cross checked but it was not possible to check contradictory statements on details.

The instructions to the authors should emphasize more strongly that the assessment is a strictly scientific process, not to be confused with a mission to save the planet.

2e. Review processes

The review process was well structured, with clear instructions. It was organised in an efficient way thanks to the support of the IPCC secretariat.

For my WG II chapter we received a few thousand comments from a few hundred reviewers. For each comment a reply was formulated, indicating if it was accepted and incorporated or rejected (with sometimes a short explanation).

I learned later that these replies were not communicated to the reviewers. This is, to my opinion, a shortcoming that should be repaired in future assessments.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

No comment

2g. Adoption of report by the IPCC plenary

No comment

2h. Preparation of any special reports

No comment

3. What is your opinion on the way in which the full range of scientific views is handled?

All major comments were seriously discussed, but I had sometimes to insist on the inclusion of divergent views

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

As far as I know, the input of governmental reviewers was handled in WG II in the same way as the input from scientific sources

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

There are inevitably mistakes in the sources (also in peer-reviewed journals) and it is impossible to check all data and figures. Information from grey literature is accepted only if a copy of the source is handled to the IPCC secretariat. I think the present procedure is adequate.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The drafting instructions could to my opinion make a clearer distinction between on the one hand data and figures that can be checked and on the other hand the interpretation that is given to these data and figures.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

This was done in the best possible way, but it was of course impossible to check in detail the reliability of all the information in the vast amount of underlying sources.

8. What is your view of how IPCC communicates with the media and general public, and

suggestions for improving it?

It is the primary task of IPCC to inform governments; it is not (and should not be) a primary task of IPCC to inform the media and the public.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The process is, to my opinion, well structured. It is the best assessment process I know of.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Funding of contributors from institutions which are not publicly financed is a problem. There is a strong bias towards contributions from publicly financed institutions.

11. Any other comments

No

1. What role(s), if any, have you played in any of the IPCC assessment processes?

IPCC Bureau member, review editor

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

IPCC is policy relevant not policy descriptive, so in this regard – identification of policy questions-IPCC always depends on frequently asked questions from governments and/or receiving these kind of questions from our partners mainly UNFCCC.

2b. Election of Bureau, including Working Group chairs

Election is done in a transparent democratic process and in equitable manner to include all regions. This is an acceptable procedure to me

2c. Selection of lead authors

Authors are selected by the respective working group, approved and indorsed by the Bureau. It always depends on scientific expertise and excellence and other factors such as geographic balance, range of views and gender. In AR5 more consideration is given to new authors and

young scientists. CLA selection depends, beside the above criteria, on the ability to work in a team, the leadership experience and skills.

2d. Writing of working group reports

Writing of reports passes through a long process which insures reliability transparency and full coverage of these reports.

2e. Review processes

Review processes are adequate to ensure that every comment has given the at-most consideration

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

this process is O.K. As for the Summary for Policy Makers, it has to be approved line by line by the panel. In many cases individual country interests conflict with some phrases in some reports which need to be changed or diluted, of course with the approval of the lead authors and without changing the scientific statement. I think this slightly affects the strength of this summery report when adopted.

2g. Adoption of report by the IPCC plenary

Same as above.

2h. Preparation of any special reports

Special Reports has the same process as Assessment Reports.

3. What is your opinion on the way in which the full range of scientific views is handled?

To make sure that full range of scientific views is handled, this is considered in selection of authors. Sometimes there are extreme views which are not supported by many references. To my mind these single reference findings has to be excluded.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The entire role is fair and important. Governments contributing to the scoping meetings, comment on the first and second order draft reports and finally in adopting reports, the governments views are well taken and considered. Unfortunately in recent times that the panel of IPCC whom many of them are the negotiators at UNFCCC. This makes some times the scientific discussion rather of a negotiating nature specially when adopting reports.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

I were always, calling for including literature from the developing countries as most of the assessed studies are from developed countries and by experts from developed countries. Even if this is grey literature and is not by one of the six UN languages but it will add a lot of information from this part of the world. Of course this grey literature have to be governed by the IPCC procedures (Ref. Appendix A, section 4.2.3. to the principle Governing IPCC Work "Two related important points here for "gray" literature are: (i) ensure quality robustness and validity of information assessed and (ii) make sure the accessibility of the sources for future reviews, of the draft reports.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

IPCC does not carry research but assessing research so always the quantification or assessing the uncertainties in data is supposed to taken care of by the authors of the original publications.

Nevertheless for IPCC to assess from many sources has established an agreed criteria such as likely, math likely unlikely among the working groups in AR4 more over in WGIII a cell table is established to define qualitatively the uncertainty, starting from High agreement, limited evidence in the first cell to Low agreement. much evidence in the last cell (Ref. Mitigation of Climate Change 2007 Technical Summary).

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Handling of data QA/QC is very important. Although as stated before IPCC only assesses research so the handling of data QA/QC can vary from one WG to another WG depending on topics, type of publication, number of sources etc. But to make sure that data quality is considered, IPCC has put that as one of the main tasks of the authors under the guidance of review editors

I think IPCC process for assessment is very inclusive and detailed, but still one can expect errors as the result of this huge work. Whenever an error has been discovered it is important to correct it the moment was discovered. This is one of the ethics of science and scientists.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I am not knowledgeable in this area. Communication although very important to a scientific institution such as IPCC. In the last Bureau meeting IPCC Communication expert made an excellent presentation for future IPCC Communication Strategy.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

No, this model is adequate and sustainable.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Yes, the work of the executive secretary and her staff now is too much. It needs strengthening by recruiting more staff, specially deputy for her. This needs more funding from parties and also funds are needed to involve more participants and contributors from DE/EIT to the assessment of this scale.

11. Any other comments

No further comments but this review of IPCC procedures is very important at this time to help in retaining the trust of IPCC and its Assessments reports to help at the end of saving the plant.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Contributing author, reviewer

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

I do not understand the procedure that IPCC uses for scoping and identifying policy questions. It is not transparent. The end result is that the IPCC is addressing a scope of policy questions that is far too narrow. Scoping the policy questions should be part of the assessment process, rather than using specific policy questions as the starting point to frame the assessment.

2b. Election of Bureau, including Working Group chairs

This requires much more transparency. I have no idea how this works beyond the vague statements on the IPCC website. The end result of the assessment reports is highly dependent on the working group chairs, and this group also selects the lead authors.

The bureau should include people with the stature and breadth of the IAC, and include people from well outside the field of climate research such as statisticians, biologists, physicists, history and philosophy of science, etc.

2c. Selection of lead authors

This is completely mysterious to me (again, beyond the vague statements on the IPCC website). An issue of concern is how and why Michael Mann ended up as a lead author for the TAR, when he had just received his Ph.D. in 1998.

In the selection of lead authors, it is critical that publications by a lead author play a minor role in the particular chapter that the author is leading. Otherwise, the assessment will be biased by the lead author's own strong opinions related to his/her own papers. This means that the dominant researchers on a particular topic should not be leading the assessment on that particular topic.

2d. Writing of working group reports

I have concerns about the topics (chapters) selected for inclusion in the reports. There is too much attention to literature review of papers published since the previous assessment report, at the expense of developing a coherent narrative with a logical chain of scientific arguments. A relatively incoherent narrative (in my opinion) has been established by the IPCC, and scientific research in the field proceeds by embellishing this established narrative. And the end result is that we are not asking the right questions in the field of climate research, but the IPCC continues with assessing the research that has been done in response to the narrative that it has established.

Consider as examples the following questions (related to WG1) that skeptics have recently asked me regarding basic aspects of the AGW argument. I can't find any straightforward answer to any of these questions in any of the assessment reports.

- How accurately is the (clear sky) greenhouse effect calculated in climate models? What is the magnitude of the error in downwelling IR flux from the climate models? In perusing the reports, I can't find any discussion on this, only a "consensus" radiative forcing from doubled CO₂ and other greenhouse gases. Are the models adequately treating the water vapor continuum? Are the models adequately treating the water vapor window at low vapor concentrations in the rotation bands?

And then we have a host of issues surrounding radiative transfer in the presence of clouds and aerosols. Not forcing (which is what the assessment reports address), but the fundamental IR/SW fluxes and their errors. What is the rationale for believing sensitivity simulations from a climate model to a small change in IR flux, when the errors in the modeled IR fluxes are much greater than the perturbation?

- Has the clear sky climate sensitivity to doubling CO₂ been accurately calculated anywhere, i.e. the average global surface temperature change in response to doubling CO₂, taking into account the range of surface types (land, snow/ice, ocean) and how their surface temperatures respond to an increase in downwelling IR? I can't find such a calculation like this anywhere, only back of the envelope simple calculations of the direct sensitivity.

- With regards to climate models, their deficiencies are airbrushed. We never see the actual temperatures simulated by the models, only their deviations, hiding fundamental problems of the model temperature simulations. There are no agreed upon metrics for evaluating climate models. There has been no assessment as to whether the atmospheric dynamical cores, which have been useful for numerical weather prediction, are adequate for dealing with climate change issues such as water vapor feedback in an altered climate.

- What is the actual forcing data (solar, volcano, anthro aerosol) used in the IPCC 20th century simulations, how uncertain is this forcing data, and how do these uncertainties impact our confidence in the attribution of the 20th century warming?

These questions are just a sample of recent questions I've received that I cannot find an answer for in the IPCC WG1 reports. These are the kinds of issues the IPCC reports should be addressing.

2e. Review processes

While the IPCC solicits review comments from a large number of sources, the actual review function falls far short of what it should. The entire process is not sufficiently transparent. It seems that lead authors can simply reject a comment without explaining why, and the review editors do a cursory sign off. The review comments should (often) result in actual modifications to the document, and the review editors should challenge the lead authors to make modifications. The review editor reports need to be reviewed (the review editors should actually write a report, not just "sign off"). A good model is the U.S. National Academy of Sciences, which often publishes a review of their documents, and the review document itself is reviewed.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

There is no question that preparing synthesis reports and summary for policy makers is a very challenging task. The key problem with these documents is the failure to establish an overall narrative with a rigorous, coherent chain of arguments. Summarizing points where there is a high level of confidence (likely, very likely) leaves out key elements in the causal chains (associated with lower confidence) required to develop coherent arguments, providing a misleading perception of the overall confidence in the findings.

2g. Adoption of report by the IPCC plenary

No comments

2h. Preparation of any special reports

I think that there should be more focus on special reports at this point, rather than the comprehensive assessments every 5-6 years.

3. What is your opinion on the way in which the full range of scientific views is handled?

Inadequate attention is given to views that diverge from the established narrative. This problem in part arises from the selection of lead and contributing authors, methods for dealing with uncertainty, but more importantly from deficiencies in the review process. In addition, any questioning of the basic narrative is considered a hostile attack. This leads to the establishment of "camps" and means that many fundamental questions are not raised.

4. Given the intergovernmental nature of IPCC, what are your views on the role of

governments in the entire process?

No comment.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

WG1 should stick strictly to peer reviewed literature, and should adhere strictly to publication deadlines so that the publications can be assessed adequately by the authoring team. If a particular topic is in such a state that one paper (more or less) makes a difference to the conclusions or confidence level, well then that topic should not be characterized by confidence levels such as likely, very likely.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The current treatment of uncertainty in the IPCC is highly inadequate, in my opinion. There is too much emphasis on expert judgment, which of course depends on which experts you have in the room. As a starting point, the IPCC should follow the guidelines established by the U.S. Climate Change Science Program Synthesis and Assessment Report on "Best practice approaches for characterizing, communicating, and incorporating scientific uncertainty in decisionmaking" <http://www.climatechange.gov/Library/sap/sap5-2/default.php>. This document should be required reading for all lead authors.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

As far as I can tell, there is no data quality assurance associated with what the IPCC is doing. There should be a very strict policy that all data used in a table or figure in the IPCC reports should be publicly available on the internet, along with the appropriate metadata. As for actual data quality, the needs of the IPCC for data quality assurance substantially exceed the needs for journal publications. The quality and uncertainty of key data sets used in attribution arguments such as historical surface temperature, paleo temperatures, atmospheric temperature and humidity profiles, should undergo a data quality assessment as part of the IPCC assessment process.

All climate models used in the IPCC assessment reports should undergo a formal validation and verification process, accompanied by clear documentation. Not just scientific publications, but actual manuals and documentation that are publicly accessible. The strengths, weaknesses and limitations of climate models and codes need to be stated explicitly and unequivocally. People are left with the impression that the 21st century simulations are actual climate predictions, and they are not.

Regarding overall quality control of the text in the reports, fact checkers and auditors should be employed to check that that statements, data, etc. attributed to specific publications are correctly

cited and that there are no undocumented statements of scientific substance.

After publication, online versions of the IPCC report could have a “corrigendum” flag that clearly points to any error that was identified and a corrected statement.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

People involved with the IPCC should not be involved in policy advocacy, this is particularly true of people working on WG1. Rachendra Pachauri’s policy advocacy activities have substantially contributed to the loss of IPCC credibility. The IPCC should undertake a formal program for educating the co-chairs and lead authors on the policy context of the IPCC and expectations for ethical and responsible behavior.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The IPCC is facing challenges to both its credibility and relevance. With regards to relevance, continuing to conduct a literature review every five years, which is the current procedure, is not very useful. If the IPCC is to continue to be relevant, future assessment reports need to broaden the scientific scope of the climate change problem to include more about natural variability and land use change and support a broader range of policy options. It also requires a detailed assessment of uncertainties.

I suggest that the structure be changed from the current three Working Groups. I think that most of what currently constitutes the WG2 Report is conducted better by individual countries or established multinational groups that can focus on individual regions. With regards to policy options, at this point the IPCC should assess a broad range of options, rather than focusing on specifics.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The IPCC needs a team of Inspector Generals (lawyers) to insure that all processes are correctly followed and that complaints are handled appropriately.

I understand that the strategies I have proposed to make the IPCC processes more air tight will require additional funding. But given the stakes, it seems that governments and/or advocacy groups would be willing to provide funds to support these efforts.

11. Any other comments

Issues surrounding the “hockey stick” (particularly section 2.3 in the TAR) have been festering since 2001, and the current loss of IPCC credibility can be directly traced to this issue, in my opinion. A thorough investigation of this issue is needed. Whether or not the IAC is the appropriate group to do this, I suspect not, but the IAC should call for an investigation of this

issue. To understand the issues and allegations surrounding this issue, I highly recommend the book “The Hockey Stick Illusion” by Andrew Montford.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

IPCC Bureau Member, Review Editor

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Some attempts. Focus is on science questions and should be.

2b. Election of Bureau, including Working Group chairs

OK but some sense of old boy’s network.

2c. Selection of lead authors

Sometime too tightly controlled by WG-TSUs. Need to involve Bureau more.

2d. Writing of working group reports

Generally well done.

2e. Review processes

Exhaustive and open.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Generally well done.

2g. Adoption of report by the IPCC plenary

Messy but probably necessary.

2h. Preparation of any special reports

Need greater involvement of subject experts for sectors being impact, as well as climate change specialist).

3. What is your opinion on the way in which the full range of scientific views is handled?

Openly and well: Even wildly contrary views are generally answered respectfully in review editors' report.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

A mixed benefit: a problem – but necessary to ensure acceptance.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

When using non-peer reviewed literature, this should be clearly flagged in the IPCC Reports.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Good. Now a model for reports in other fields.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Quality control generally good, but should be arrangement for errata sheet promptly after problems discovered.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Should be greater media blitz with lead authors, co-chairs, etc. when reports are released and a quick response mechanism through the Secretariat.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Sustainable as long as governments continue to support authors, TSUs, etc. No suggestions.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

See number 8 above, only if a number of key governments withdraw should alternative funding, e.g. foundations, be sought.

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None (policymaker)

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

The mechanics of the IPCC assessment process seems reasonable to me. Where the problem lies in my view is in items b and g “Adoption of report by the IPCC plenary”. Such plenaries mix science and politics which is evident in the election process of the Bureau and the IPCC chairman.

3. What is your opinion on the way in which the full range of scientific views is handled?

Reasonably well although the idea of establishing WGIII was a bad one. IPCC should have been restricted to WGI (Science) and WGII (Consequences). The scientific process should be separated from the policy decision process which is always dictated by governments. The present process gave to some members of IPCC the delusion that they could replace governmental decisions.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The two processes should be clearly separated. The IPCC Report should be presented to governments and not to the IPCC plenary.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Non peer-reviewed literature (“gray literature”) should be excluded or treated with extreme caution.

6. What are your views and suggestions regarding the characterization and handling of

uncertainty in each of the working group reports and the synthesis report?

Scientists live with uncertainty all the time and the only thing that can be done is to separate what is well established and what is not. That is what policy makers want in order to decide better what direction to take. That does not mean making the error bars very wide in the name of fairness (which one of the weak points of the IPCC Assessment)

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Reasonable. What should be avoided is to encourage the members of the Bureau or chairman of the IPCC to make passionate statements on the results. Errors should be admitted humbly and to create a “bunker mentality” in defending the IPCC is the wrong strategy to follow.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

No suggestion. I think IPCC has enough press coverage as it is.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

As stated in item 3 above IPCC should restrict itself to WGI and WGII as well as reduce/eliminate the whole concept of Plenaries.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

NO. This does not seem the problem IPCC is falling at this time.

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead author, IPCC Bureau member, Review Editor (chapters, Synthesis Report)

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

Considering the highly successful results of the IPCC during the last years since its creation on 1988, the international community developed important awareness on the importance of the roles of this intergovernmental organization as a scientific and technical body of the United Nations Organization.

However there is lot of weaknesses with negative impacts on the quality, transparency and integrity that could jeopardize the credibility and the sustainability of the work of the IPCC assessment process at short, middle, and long term.

The highly successful results of the IPCC provide a respected level of notoriety for the IPCC as UN Body. This new *comfortable* situation creates and increases the risk and the temptation for many persons to try to join the IPCC in the perspective to benefit from this privilege and notoriety for personal ends.

This is one of the most risks which could unbalance or/and alter the missions of the IPCC from its recognized reputation at the international level.

	Strengths	Weaknesses
<i>2a. Scoping and identification of policy questions</i>	Open debate and discussion on the major policy questions.	Many other policy questions are not yet considered.
<i>2b. Election of Bureau, including Working Group chairs</i>	The IPCC is a democratic organization at the international level.	Some IPCC focal points are not open to allow involvement for competences from their countries. The actual system working through the authority of the focal points could jeopardize or limit the success of the IPCC in the future.
<i>2c. Selection of lead authors</i>	Selection on CVs.	The IPCC focal point representatives are not well assisting the IPCC process.
<i>2d. Writing of working group reports</i>	Strong writing team.	The writing team is mainly English spoken.
<i>2e. Review processes</i>		The review process is not well defined and should be amended in a clear guideline.
<i>2f. Preparation of the Synthesis report, including the Summary for Policy Makers</i>	These documents are critical to reach multiple target users of the IPCC results.	The preparation of the SR and SPM should be supervised by another scientific/technical party other than IPCC bureau members.
<i>2g. Adoption of report by the IPCC plenary</i>	The IPCC plenary is a good step of the adoption process.	There is a need to develop and set up a recognized structure or entity to proceed for final adoption of the IPCC reports.
<i>2h. Preparation of any special reports</i>	Important to deal with specific issues related to climate change.	The process of the preparation of the IPCC Special reports is not yet well defined.

Recommendations:

The role of the IPCC focal points could be reviewed and amended to allow access for additional

scientific competences from the entire world to contribute to the IPCC assessment process.

Some IPCC focal points are not open to allow involvement of competences from their countries there countries. There is a need to develop a new and equitable system of the selection of lead authors.

The accumulation of the positions of IPCC bureau member and IPCC focal point should not be allowed during the Fifth Assessment Report and coming assessments.

The writing team of the IPCC reports could be multilanguage and geographically balanced.

The preparation of the SR and SPM could be supervised by other entity other than the IPCC bureau members.

The final adoption of the IPCC reports could be supervised by a recognized structure or entity accredited by the UN system.

3. What is your opinion on the way in which the full range of scientific views is handled?

The full range of scientific views are partially handled because of many views are hidden and should be considered to develop global or regional assessment initiatives. During the next years, scientific views will change to focus on the priorities of the international community and their needs to respond to actual crisis and environmental and commercial trade.

This situation should accompanied by a system for handle, capture, and synthesis of scientific and technical views of different partners dealing with climate change information and interested to the IPCC results. This to perform their activities on adaptation and sustainable development.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The role of the governments still limited and/or fully confided to the IPCC focal points prerogatives. This is because there are not yet enough competence, and the problem on climate change still linked to environment and meteorology. This situation is not benefic and could not promote the IPCC process in the future.

It will be better and operational that the IPCC focal points move from the Ministries of Environment / Services of Meteorology, to be located at the United Nations National Representative in agreement with the government. The problem of climate change become bigger to be a simple problem of meteorology or environment, but the services of meteorology consider that no others could deal with climate change and still very close to open the process to other competences.

For example the IPCC focal point could use with his responsibility to withdraw the candidature of another candidate from the IPCC bureau election to keep himself as a unique candidate and avoid being in competition.

In the spirit of its integrity, the IPCC should take impartial decision against the use of authority and other non scientific procedures to access to the IPCC bureau.

The IPCC should implement appropriate procedures to statute on the abuse and corruption committed by eventual IPCC focal point representative particularly when the illegal actions are clearly confirmed and the IPCC representative failing to provide convinced explanation on his acts.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

During the past IPCC assessments the literature used were mainly developed by scientists of the developed countries. This situation could not continue forever. The assessment process of the source of data and literature could be reviewed to insure geographical balance of data and literature inputs.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The science of climate is and will be never exact. However the uncertainty will be seen during the coming assessment process. The characterization and handling these uncertainties is a key issue to avoid negative impacts on the robust finding of the IPCC results. In this context dealing with uncertainty should be proceeded in a comparative ways and approaches taking into account information of complementary assessment process related to economy, finance, industry, agriculture, health, etc; in coordination with concerned international organization of the United Nations System.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Actually there is no accredited process to handle data quality and quality control of the information for IPCC errors. After publication and plenary discussions, there are only promises for further amendment.

I think the Organization of the International Property or other entity could be invited to advise on the best ways for IPCC to handles data quality assurance and quality control.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The IPCC communication with media is moving well during the last years. The problem is the media are not well familiar with climate change problems, and procedures at national, regional or international levels.

It is recommended that the UNFCCC double efforts on building capacity of media and general public to facilitate awareness and implementation of IPCC results.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The IPCC assessment model could be amended to allow better consideration of the new situations not well known in the period of its creation on 1988, like carbon finance, renewable energy resources, green economy, green jobs, etc...

At the national levels, the IPCC assessment model should not be controlled only by the IPCC focal points, and should not have the ultimate authority to decide on accepting or withdrawing potential candidates for bureau election or for lead authors of IPCC assessment cycle.

The IPCC could UN Horizontal Body depending directly to United Nations Secretary-General to allow more partiality, integrity and balance between different UN Bodies using IPCC results other than WMO and UNEP.

The IPCC focal points should not allow double functions of IPCC bureau member and IPCC focal point.

The nominations for IPCC assessment process could be transmitted through the United Nations National Representative instead of the IPCC focal points

The nominations for the IPCC bureau election could be transmitted to the IPCC Secretariat through the Ministries of Foreign Affairs via the United Nations Representative.

Avoid the accumulation of the positions of WMO focal points and IPCC focal point.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The IPCC secretariat could be more operational out of the WMO building to avoid eventual influence on the work of the IPCC.

The funding of the IPCC could be shared by all the United Nations bodies of the United Nations Organization similarly with the Secretariat of the UNFCCC

The missions of the IPCC Secretariat could be revised and amended to take into account the needs of other United Nations bodies other than WMO or UNEP

11. Any other comments

There is a need to create a United Nations Administrative Council for IPCC or Governing Board to supervise the work of the IPCC bureau. The members of this Governing Board could be nominated by the United Nations or selected through a defined UN process.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Coordinating Lead Author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2c. Selection of lead authors

Selection of lead authors should be more transparent. Scientists from developing countries should be given adequate representation on all Chapters

2d. Writing of working group reports

The Working Group report should ideally be a synthesis of current knowledge based on the collective wisdom of all CLAs, LAs and Review Editors. Many times, it appears that each Lead Author works independently.

2e. Review processes

Although the review process in theory is very rigorous, often this is not effectively implemented. CLAs and LAS should take all comments seriously and address them. A detailed analysis of all comments made by reviewers and responses made by Las should be made by Review editors as well as by TSU and IPCC Bureau.

2g. Adoption of report by the IPCC plenary

The process appears to be very clear. However, often we see in the discussion that scientific merit gives way to political priorities. This should be avoided.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The role of Governments in this entire process of assessments is extremely crucial. However, they should restrict their role to contributing funds, authors and resources and do not interfere in the fair and transparent science reporting by Authors and Editors.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Many developing countries do not necessarily publish in global peer-reviewed literature. Sometimes, they also publish in their own language. It is important for IPCC assessments to

consider such literature as well without significant bias. Understanding provided by developing countries studies is perhaps more relevant than global studies at local and national level especially for adaptation, where action can be taken.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

There are always the possibilities of errors in the enormous data handled by hundreds of authors in IPCC. That is human. However, if errors are identified even after publication, IPCC should constitute a mechanism to promptly review them and rectify these errors immediately.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

While global studies are very useful in terms of emission inventories and mitigation details, adaptation actions generally have local, regional, and national focus. It would be worthwhile to examine how best regional focus in IPCC assessments is increased. I believe instead of one large report on adaptation (WGII), IPCC could possibly come out with 3 smaller focused reports with specific case studies for stakeholders at a) global, b) national and c) local levels.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Expert reviewer, Coordinating Lead Author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

I took part in the scoping of the WG1 report. I think this was a broad and balanced process. Both scientists with past experience from earlier assessment reports and scientists without were brought in and participated. There were also some input as to key priorities from the leadership of IPCC. and from some governments. I think there could have been a more firm process beforehand whereby the governments more jointly expressed their overarching policy questions. Yet I think the scientists should have the key role as was the case in the scoping, of defining the key issues, since this requires in-depth knowledge of recent scientific literature.

2b. Election of Bureau, including Working Group chairs

I am not exactly familiar with how this is done. I would have liked a more transparent nomination process.

2c. Selection of lead authors

The process is fine with me. There is a very broad and open nomination process. Care is taken to renew the author teams between each assessment, about 70% of AR4 LAs did not take part in the TAR. There is an appropriate balance between experience and new, younger scientists. I assume that for WG1 this mode of operation continues in AR5.

2d. Writing of working group reports

I have only experience with the WG1 report of AR4. The writing of the report was extremely thorough and careful and done with diligence. The co-chairs and the TSU were extremely cautious about following IPCC precedures and process documents. Lead authors had sufficient freedom to write their text, and a lot of care was taken to ensure that problematic issues were tackled and that balance in resentation of views was maintained. I have never observed anything close to the stringency employed in the IPCC. I have been part of a number of international assesments and steering committees in global and national science prorgrammes, but have never experienced something that was as carefully executed as this.

2e. Review processes

The review process produces a strong demand on the author teams. Most of Lead Author meetings are used to go through and respond to the review comments. I think the process is fair and transparent. It is correct for the IPCC to employ an open policy when it comes to making all comments and responses available to the public. The requests that has been put forward that all internal corresponce within the author team is also made public will not be a good solution, as it will restrict the open collegial dialogue between the Lead Authors. The process depends on an open atmosphere between the lead authors and that we can express our opinions of the work of our peers in an open and non-bureaucratic manner. If all of this be placed on the record as public documets, the quality of the process will be reduced and it will be difficult to recruit authors to actually do the job, out of fear of being mis-quoted and mis-used in the blogosphere.

The role of the Review Editors is critical. My experience is that they did their job, but could have been more pro-active and clear in their requirements, and more like journal editors in their operational mode.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

I was not involved in writing the synthesis report. One problem with this for AR4 was the carry-over of experience between the working groups. This did not function well enough, leading to errors, e.g. the Himalaya glacier example in WG2 which could have been rectified if a more proper in-depth involvement of WG1 authors were employed in the WG2 final stages. I think this also go for the synthesis report, where a more formal intra-WG1 lead author reviw should have been undertaken.

The AR4 WG1 SPM was produced in the same consistent manner as described for the rest of this report. As a CLA, but not on the SPM writing team, I was given many options to address the drafts and ensure consistency with the main report. Before the Plenary which adapted the SPM in

Paris we had a two day meeting of all CLAs to address the government comments before the opening of the plenary.

2g. Adoption of report by the IPCC plenary

The plenary was a very slow and at times awkward experience. Governments tried to get the scientists to change their conclusions to some extent, but less than I had thought beforehand. There was, however a large portion of time mis-spent on unnecessary wordsmithing.

Through the process the scientists had full control of the end product and got their will through. There is no basis in claims that the science was changed due to political pressure.

The process is difficult, but I see that it serves its purpose of binding governments to the scientific facts.

2h. Preparation of any special reports

Does not apply

3. What is your opinion on the way in which the full range of scientific views is handled?

I think the IPCC does a thorough and fair job. There was hardly any screening of views and as CLA I had no idea about the viewpoints of the author team of my chapter on special issues such as the attribution of climate change to human causes, when we started. This was not an issue. We worked on assessing the published literature.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

As stated above, I think there is a need for governments to be involved in the adaptation of the report. I think the selection of authors and WG chairs should be more left to a scientific body without Government involvement. I think this would help solidify the perception of a fair process.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

I see the need to allow non peer-reviewed literature, but it should be applied with more caution and stricter rules than practised in WG2 and 3 in AR4. WG1 has an easier task, but some of the stringency of WG1 should also be employed by WG2 and 3.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I think this was handled well in WG1. I think some sections of the WG2 and 3 reports some

conclusions are made with too little foundation in a breadth of literature. I think more cautiousness concerning concluding on important aspects before there is enough peer-reviewed literature should be employed in the future, hopefully in AR5.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The IPCC lacks a system of swiftly responding to errors in the report. There should be protocols and adequate response times when such issues come to the surface.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The IPCC lacks a consistent media strategy and has underestimated the importance of this. Governments should give more funds to cover this, as recent examples show how vulnerable the organisation is to negative media attention and specious claims that the IPCC is confronted with.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I still think regular assessments about every 6 years is the best model. One needs some time for the scientific process to develop and to let the scientific discourse test the robustness of results. Major reports carry more weight. If reports came more frequently one runs the risk of putting too much emphasis on single results which do not stand the test of time.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Volunteer work from scientists is still my choice of model. The secretariat needs more professionalism in terms of media handling and outreach.

Finally, I think the current IPCC leadership has had a tendency to enter into value issues and become policy prescriptive. I think it is important that these boundaries are not transgressed.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

LA, CLA

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Being involved in a Regions Chapter, it was often apparent that the outline chapter structure (headings and subheads within the chapter) were devised by the Plenary session for the highly-populated regions, and ill-fitted to the region. The lack of a check on such issues, or the opportunity to have input to the structure of report and chapters was understandable, but frustrating and led to some strange shoe-horning of information into subheads.

2b. Election of Bureau, including Working Group chairs

No opinion

2c. Selection of lead authors

No opinion – except that I could attest to the quality of the teams I worked with.

2d. Writing of working group reports

The arrangements for this were adequate, but could be improved with fewer international meetings, entailing plenary sessions or dubious value. For 5AR we probably need more video-conferencing. But when meetings are called, I would like to see a strong line on attendance.

2e. Review processes

In TAR and 4AR, I found the review process to be thorough and comprehensive, however, the reviewers, on occasion, appeared to be far from impartial and the author teams sometimes needed to be robust in rejecting their advice. In a few areas, I believe that guiding principles which I applied to my chapter should have been more widely applied. Firstly, that the reviews were taken as advice that could be either accepted (this was mostly the case), or rejected so long as a reason was recorded. Secondly, no new material should be added in response to the second-order review, since those additions would not have been through the full review process and could be dangerous.

I think that the Review Editors have an important role to play, but are currently seen as simply referees ensuring fairly play. I would expect review editors to attend each of the chapter meetings, for at least the final stages of the meeting.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

No opinion

2g. Adoption of report by the IPCC plenary

I suspect that to anyone who has not been involved in this process would scarcely believe how this meeting is managed; the expense, the length of the sessions, and the apparent pickiness of some of the discussion would strike many as a very poor way to conduct international business. However, I understand its function and don't have a strong alternative, except perhaps, to request countries to prepare a list of points on which they will raise objections prior to the meeting.

It is not, made sufficiently clear to the general public etc, that the SPM is the “consensus document”, and that the chapters are the unmodified text approved by the IPCC authors. A note to this effect could usefully be added to the SPM and WG reports.

2h. Preparation of any special reports

No opinion

3. What is your opinion on the way in which the full range of scientific views is handled?

Presumably, the question refers to those that reject for various aspects of climate change, and who are in general opposed to the groundswell of scientific opinion. Perhaps, explicitly discussing the bounds for where general scientific agreement has yet to be achieved could provide a useful counter to the perceived “arrogance” of the IPCC process. This might take the form of a list of “urgent research questions” attached to each chapter.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The IPCC is owned by the governments and so they should call the shots, however, I would ask them to think collectively whether the outcome is what they want, or whether more interesting choice of working groups etc, could add some improved insight into the process.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The bulk of the scientific literature is peer-reviewed for a reason, and so, while not infallible, is generally more reliable than non-peer reviewed literature. We should seek to use P-R literature where ever possible to support our statements, but leave the way open to cite NPR stuff where necessary. Perhaps, we need to highlight NPR contributions, which an asterisk or similar.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Clearly there is a need for an online list of Errata

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The way that the SPMs are presented to the general public means that it is the media that decide on what is the big story, and they have to do this without any time to read the document and

consider. I guess that in this case an embargo would not be entirely possible to enforce, but perhaps we could allow one-day between closing the plenary and announcing the results, time enough at least to present a proper guide to editors.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I am against any idea of a rolling assessment, but the use of special reports should be continued.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

I believe that the quality of the language used in the chapters is not uniformly high, and the secretariat could sometimes assist in this.

11. Any other comments

None

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead author, CLA, ex-officio member (observer) of the Bureau

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

This has been a difficult issue for the IPCC and the UNFCCC. Ideally, the UNFCCC should be able to identify key issues, but politics (largely in the form of opposition from OPEC countries) has not allowed it to do so. The IPCC has been left to its own devices and has tried various approaches. (See the differences in the AR3 and AR4 SPMs).

With regard to the authors, the scientists and technical experts generally have little experience in policy positions and hence find it difficult to identify and present policy relevant information in a neutral fashion. The key people in this regard are the CLAs. If they have some policy experience, it helps a great deal to ensure that the chapter is policy relevant.

2b. Election of Bureau, including Working Group chairs

The election of the bureau has been a political process that has not served the IPCC well. One way to fix this is to limit the term of bureau members to 2 assessment periods. The IPCC could also adopt a code of conduct for bureau members (including the Chair, Working groups and

TSUs). This code could prescribe that bureau members abstain from policy prescriptive statements in public, represent the IPCC reports accurately and require members to reveal any conflicts of interest. The CVs of the elected bureau members could be updated annually and put on the IPCC website. This would also help to identify possible conflicts of interest.

2c. Selection of lead authors

The selection of lead authors is based on a mix of competence and politics. The result unfortunately is usually a chapter team that has 3-5 people who do most of the work, a few who make minor contributions and several for whom participation is a capacity building process. Given the intergovernmental nature of the IPCC and need to demonstrate some nominal balance there is no easy fix for this problem.

My understanding is that the working group chairs (and their supporting TSUs) undertake this task. The process is not transparent and it depends a great deal on the competence of those individuals. Much depends on their ability to consult with wise people about the applicants. On the other hand, when given hundreds of resumes to consider, I see no more efficient way to undertake this task. It is not a job for a committee.

2d. Writing of working group reports

No comments

2e. Review processes

The writing and review process takes an extremely long time. It could easily be cut to two years. This would have the benefit of saving the time of the experts, cost savings, ensuring up to date references and focusing the attention of all concerned on the products. Six months between the author, expert and government reviews should be more than adequate.

Regarding review editors, they are required to read all the comments on each draft of a particular chapter and to ensure that each comment is treated properly, noting on a spread sheet how the comment was addressed. Up until now REs were not required to check the actual substance of the referenced material. On occasion in the absence of a strong, CLA they sometimes are called upon to arbitrate among lead authors with different opinions. If the chapter coordinators are good at their job and the drafts are in good shape the job is not too difficult, but if the chapter is a mess...well. All spreadsheets could be posted on the web for greater transparency.

There are a number of steps that could be taken with regard to the role of the RE. The IPCC could provide obligatory professional training of REs to improve the consistency of their work. It could also increase the number of REs to match the capacity needed and give greater power to REs by authorizing them to approve or disapprove final material. It might also set up a process to conduct cross-cutting reviews when similar material is treated in two or more reports or chapters.

Reference checking is a particularly arduous task even with the assistance of software packages.

This could be made easier and more reliable if a group, perhaps composed of grad students, were assigned this task and given some form of recognition or perhaps compensation.

One might ask whether governments should be involved in the review process. My experience suggests that, despite the occasional politically driven comments, the government representatives are usually very helpful and help to bring clarity to subjects often wrapped in technical jargon. Since governments approach the IPCC report from different perspectives, their political perspectives usually cancel each other out in the end.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

The issue is not the preparation process, but what kind of synthesis should be written. Up until now, the synthesis report has been limited to drawing on the material in the three WG reports. There has been almost no opportunity to bring in any new material even if it amounted to a major breakthrough. Under these circumstances, I think the preparation of the report, by a select group of CLAs is adequate. If the nature of the report were to change, consideration would need to be given to at least a rapid expert review process.

2g. Adoption of report by the IPCC plenary

The strength of the IPCC process is that governments own the report. Government involvement is also a weakness. In my experience the reports are generally, clearer after the final plenary, although some topics may suffer some obfuscation. Since CLAs have the final say as to whether any rewording of the draft text is scientifically acceptable, much depends on their ability to stand up to government representatives pressing for changes. Skillful, experienced, chairpersons are required to protect the CLAs and ensure the scientific integrity of the text. This has not always been a required skill when selecting WG Chairs. Prior experience in chairing large technical/political meetings should be a prerequisite for the job of chairperson.

2h. Preparation of any special reports

No comment

3. What is your opinion on the way in which the full range of scientific views is handled?

Generally a great deal of care is taken when there are different views as exemplified in the scientific literature. However, when there are dissenting opinions that are not supported by the literature and these views are dismissed, it can lead to dissatisfied, sometimes vocal critics. The REs and the chairpersons are the guardians responsible for ensuring that all scientifically based views are represented.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

See above text.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The IPCC is at the mercy of the peer review processes conducted by various technical journals. It cannot be expected to review all the data and assumptions used in the atmospheric, impact and energy models indirectly referenced by the three work Groups. On an exception basis, there may be a few special topics that could warrant a more in depth review.

Some of the most policy relevant information does not appear in peer reviewed literature. Without it the IPCC could become irrelevant. The current system which relies on the judgment of the lead authors to determine the use of non-peered reviewed information seems to be appropriate. Even with some latitude to use non-peer reviewed literature, it is difficult for the IPCC to keep track of cutting edge material; such is the case for proprietary research undertaken by many corporations.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I believe that the inherent differences in the nature of the material treated by the three WGs require flexibility in the way uncertainties are described by each group. Aside from the nomenclature used by the WGs for the SPMs and TRs, this is a matter of putting material in the proper context. I would be very concerned if the IPCC were to degenerate into saying that 3 papers say this and 2 papers say that!

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The IPCC does not process data and therefore I don't think the first part of your question is relevant. However, with regard to the rectification of errors, the IPCC clearly needs improvement. A web page to report errors and the routine issuance of an erratum within a determined period after an error has been recognized by the authors would help.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The IPCC usually does a good job of communicating its information for one day...when the WG reports or Synthesis report is released. After that...things fall apart and become ad hoc. Bureaus members, WG chairs, CLAs and LA are all contacted by the media. In most cases they have had no formal media training. With the exception of WG3's effort to brief selected countries on the AR3, the IPCC has had limited resources for formal in-country briefings.

Rectifying this situation will require hiring trained communication specialists, training for all participants in the IPCC process (which could be mandatory and done at one of the WG meetings), a communication strategy (one was developed for consideration by the bureau, but did not get operationalized) and resources. Hopefully governments now recognize the

importance of this function and will provide sufficient resources. However, no amount of training will replace good judgment and to some extent practice..

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

One option is to prepare annual or biennial updates on selective topics. My organization has done this, but the literature reviewed is limited as are the topics due to resource constraints. The IPCC could do much better job on topics where significant new information has become available. In order to do this, governments would have to trust the bureau to oversee the selection of topics and thereafter entrust the IPCC to do this with minimal interference.

A second option is to simply shorten individual WG reports by dropping entire material/chapters. For example, some of the scientific information in the WG report makes only a marginal difference in our understanding of climate change. It is simply in there for completeness and because of historical reasons. Likewise, I find the WG 2 report suffers when it comes to projecting impacts because there have been few methodological improvements. For the most part such projections rely on the same approaches employed 20 years ago. On the other hand, there is a continuous stream of information on current changes to ecological and other systems that could be synthesized in a much better fashion and form the bulk of the WG2 report. This option is likely to run into both government and scientific opposition for obvious reasons.

A third possibility is to empower the IPCC to use its website more effectively to make both data and new literature available without judgment as to its quality. This would essentially make the IPCC the 'go to' website for new scientific and technical information. It would require a different kind of support staff and a new kind of arrangement with the relevant technical journals. This could supplement the current or a new reporting system.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The current system relies heavily on a positive working relationship among the Chairman and the chairs of the WGs. In the past communications among these key individuals were not always what they should have been. The TSUs can help to nurture these links but leadership and cooperation among the key parties is essential if the IPCC is to be effective.

Within the last 5 years, the US government was providing over 50 percent of the resources for the IPCC. If this is still the case, it may soon become politically unacceptable. It could be rectified by the use of an indicative scale, taking into consideration support given to the TSUs.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Contributing author, Convening lead author, Review editor, IPCC Bureau member

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

These questions relate to incremental changes to the current model. I have addressed only a few. Most of my comments are covered are about less incremental change and are covered under questions 3)-10)

2a. Scoping and identification of policy questions

I believe it would be beneficial for IPCC to work up a draft set of policy questions to be covered by assessment reports early in the cycle. This could help to guide to focus the assessment, allow more systematic approaches to literature review (see Q5) and reduce the assessment load. Given the length of the assessment cycle, it is appropriate that any question list is a “living document” which responds to on-going policy needs.

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

The nomination and selection process is broadly sound but I believe that the “principles” applying to the selection process could be tightened up and defined as “criteria”. Given the complexity, judgment will always be required in the selection and formally scoring nominees and weighting the criteria will not be possible. However, there needs to be some guidance that no one “principle” (scientific record, geographical spread etc) is dominant.

Currently, the Bureau may augment the government and other nominations for lead authors by adding names directly. In the AR5 selection for one WG, the Bureau additions were considerably less diverse – in terms of country, gender - than the original nomination list. The risk is that the lead author teams become too homogenous and do not reflect a sufficiently wide range of perspectives. Guidance on additions made by the Bureau would be helpful.

2d. Writing of working group reports

2e. Review processes

The review processes on paper are thorough and I would certainly not recommend making them more elaborate. IPCC’s difficulties are largely because the procedures written down on paper have not been applied. A greater emphasis on the role of review editors may help here.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

From the scientific perspective, a need sometimes emerges to modify language to accommodate the sensitivities of individual countries. This emerges in agreeing the outlines of reports and in drafting the SPMs. These accommodations do not, on the whole, relate to underlying science but rather to definitions, categorizations etc (e.g. within developing countries should emerging economies be distinguished from least developed economies). As many country delegates attend both IPCC and UNFCCC meetings, political sensitivities from UNFCCC sometimes dictate permissible language in IPCC material. In the end I would regard this as tiresome, potentially leading to clumsy language and presentation, and part of the occupational hazard of operating at the science-policy interface rather than a fundamental flaw. .

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Systematic Review

Whereas the process of reviewing draft reports is elaborate, the process by which literature is selected for review is haphazard and subjective. At the chapter level, this relies on the knowledge and networks of the lead authors. This may not be a difficulty where the relevant literature is relatively focused (e.g. WG-I) but can pose more problems where the literature is diverse and scattered (WGs II and III). There are established “systematic review” procedures practiced in other area of science (e.g. medical science through the Cochrane collaboration) which allow literature to be identified and screened for both relevance and quality. This essentially involves identifying “the question” that is to be addressed, developing appropriate keywords with which to search a defined set of databases (e.g. Web of science) and then applying a template for screening the selected literature according to well-defined criteria.

This obviously changes the nature of the review process. The role of expert judgment changes (it is exercised more strategically but less subjectively) and there is a greater need for basic research assistance. It could be seen as taking discretion away from experts (as is the case in medicine!). Nevertheless, there are big advantages in that: a) no areas of relevant (or dissenting) literature are omitted; and b) the exercise can be audited and replicated – two teams given the same task are likely to arrive at the same result.

In my day job, we have adapted systematic review procedures to address sensitive energy-related issues and have found the approach to be powerful and appealing to policymakers.

Adopting a more “systematic” approach to review would necessarily change IPCC procedures considerably but it might be worth studying it or piloting it in Special Reports which tend to be more focused.

Grey literature

If I take it that the role of IPCC is to sift available knowledge on climate-related to help policymakers then the use of grey literature is unavoidable as, especially in the WG II/III domains, there is a great deal of relevant insight outside the peer-reviewed academic literature. It would be a ducking of responsibility to omit this literature even if reviewing it rigorously more challenging. However, there is a clear need to specify, document and promulgate tighter criteria as to what constitutes acceptable grey literature (and equally importantly what does not). An example of a positive criterion: many official government reports are thoroughly reviewed even if not in the academic sense – evidence of a review process would count as a positive indicator for me. If an NGO report had been demonstrably gone through a credible review process I would find that acceptable. A negative criterion: unsourced media reports (which have featured in early IPCC reports and in AR4 in relation to mountain ice).

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The approach to uncertainty (level of agreement, level of confidence, volume of evidence etc) has been worked up over time is basically sound.

Nevertheless, there may be a tendency for the formalized approach to lead to an overstatement of “certainty about the uncertainty”. If it is said that we are “highly confident” about something, and this equates to 90% probability, in many cases we may be being seduced by the quantification. In practice, the 90% number may well have been subjectively assigned based on expert judgment rather than relying on underlying science. There are also incertitudes that may not be characterisable through formal probability distributions (going beyond the “known unknowns”). For example (and this is based on conversations with climate scientists), the recent cold winter in NW Europe was caused by blocking high pressure areas which effectively flipped the region from a maritime to a continental climate. We do not know whether such outcomes are more or less likely under climate change. If the formal IPCC approach to uncertainty is not fit for a particular purpose, we ought to say so.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

This could be addressed quickly. If a possible error is detected, it should be promptly placed in a publicly visible “quarantine” area pending a proper review – analogous to the “corrections” section in a newspaper. Major errors would need an independent review and, possibly, the response signed off at the IPCC plenary level. Lighter touch procedures would probably be appropriate of authors volunteer an error or if the error is minor. Whatever, procedures need to be put in place.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The IPCC performed extremely poorly in terms of communications over the last 12 months.

There are intrinsic difficulties with effective communication when, in the end, the only decisive body is the full plenary which may only meet once a year.

In practice, there were *ad hoc*, inconsistent and often ill-advised public responses to criticism from the Chair, Bureau members and the secretariat. IPCC needs a professional communication function which is I am pleased to see being addressed. This needs the authority to respond to urgent demands but also the wisdom to know when to stay silent and lower the temperature of debate.

It would be helpful if the communications function could distribute “key lines to take” messages to key IPCC members (CLAs, Bureau etc). Independent scientists cannot be bound by such guidance but it would help to promote more coherence.

Declarations

To promote public trust, there should be a full declaration of interests (committees, directorships etc) of key IPCC players – say the Bureau and CLAs, perhaps LAs – on the IPCC website.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

IPCC procedures evolved when the volume of climate-related literature was much smaller. The response to the exponential growth in the literature has been to expand the report, the number of chapters and the number of authors. The outline and lead author selection for AR5 reflects this trend. This has a real resource implications for; a) the scientific community; and b) governments. The current assessment model will creak through AR5. Whether it is appropriate in the longer term is less clear.

The case for shifting the balance away from periodic encyclopedic assessments towards more focused special reports driven policy questions by merits serious consideration.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Even as Bureau member I still do not understand what precisely is its function nor looking through the website can I find its terms of reference. The IPCC’s governance structure has grown rather than been directed. The “E-team” for example, which is nowhere mentioned in documentation, now plays a key role. Some consideration (and subsequent documentation) of the role and responsibilities of IPCC’s constituent bodies (plenary, Bureau, e-team, TSUs etc), and their relationship with each other, would be valuable. Setting out a “terms of reference” for each of the bodies, and a clear definition of where and how responsibilities are delegated, would help. At the moment, there are “principles” and “procedures” for operation. Plenary takes “major decisions” for example. What are they? The only reference to Bureau procedures relates to election.

The Bureau operates in idiosyncratic fashion being composed of elected scientists which “may

be accompanied by a representative of their government". In practice, at least 50% of the interventions at Bureau meetings are from government reps (I have counted!) and the Chair generally refers to the scientists members by their country affiliation. The *de facto* role of the Bureau much of the time appears to be to act as a forum for rehearsing issues that subsequently arise in Plenary. If this is its role, you could imagine it might be constituted differently and its other functions conducted by a different body.

I also believe that IPCC is missing a "management board" function that oversees the work of the Secretariat. This could have a rotating membership of government reps. Such a body could have helped during the communications crisis

If you wanted to design a body that does what IPCC does from scratch, you wouldn't start from here!

11. Any other comments

Thanks you for the opportunity to respond and my apologies for getting carried away and writing at excessive length.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

CLA, contributing author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

These seem OK as long as there is flexibility for LAs and CLAs, where necessary, to modify the chapter outlines developed from the scoping reports that are given to each chapter writing team at the start of each Assessment. I was involved in a scoping report, but for the sections that I was involved with there was no explicit mention of policy-relevant questions.

2b. Election of Bureau, including Working Group chairs

I don't know much about how this election takes place. It might be useful to publish minutes of the meeting, but I can also see arguments why this may not be possible. The election has to revolve around the developed and developing world and is constrained by which countries want to contribute to the running of the Technical Support Units. Perhaps there should be information given as to how many people and countries wanted to take on the roles?

2c. Selection of lead authors

It has always been unclear how this has been undertaken up to and including AR4. Maybe there will be more information given about how the AR5 teams (CLAs, LAs and REs) have been recently chosen. I realize that there has to be geographical and developed/developing country balance. One possibility might be to publish all the nominations together with those selected.

2d. Writing of working group reports

Extra guidelines would help. I have been asked by prospective CLA about this for AR5 and I offered the following as guidance from my experience with AR4. First question to ask is what chapter is it and ensure you look hard at the scoping outline that has been approved. Look also at the other chapters to ensure that pieces are not missing. The next question to ask is who are the lead authors you will be working with and what are their credentials? There is an issue that CLAs and LAs are asked if they would like to undertake the task, but don't know who the others on the chapter team will be. The first job is typically to go through the outline and add an extra layer of subheadings, and there are some possibilities for modest changes in the headings you have been given. This outlines the expertise you will need. As CLA you should delegate everything. So the chapter is then divided up into sections that each LA is responsible for. It should be a rule that there are always 2 LAs responsible for each section although one should be in charge. The second provides a cross check on the first. However this greatly depends on the skill and expertise mix. Having a veteran with a novice, having a developed country scientist with a developing country one etc. is one way we found useful. So you will have an annotated outline with all the subheadings and a list of LAs responsible for each section. The LAs are responsible for the whole chapter: their name is on it, but in practice many will only do their part. The CLAs are really responsible for the whole thing and so it is best if others do the pieces and the CLAs do the assembling and integrating. The whole chapter should be recognized as a team effort and the whole team should sign off at the end on every part. The next task after assigning topics to LAs, is to go through and decide on contributing authors (CAs) who are asked to write up to a page or so on a very specific topic and provide references and possibly a figure. One can also get contributions from skeptics and alternative views and make them part of the process. If those views have substance then both views have to be discussed. The LA serves as the editor of these pieces and makes the first cut. To be responsible, one can later send the section back to the CAs so they can see what was done to it and get buy in. The current IPCC rules allow anybody to volunteer as a CA. This is OK, but each chapter might end up getting material that is not in their expanded outline. There might then be complaints that text supplied by these volunteers was not used. It is best that the chapter team decide on the CAs they wish to involve. Figures are one key aspect and to the extent possible get the data for the figure rather than just the figure, and get updates if it is about observational data. The latter will be required for each draft during the 2 years of each Assessment. The main task of the CLAs is to make the LAs do the writing. This is one way to view the task: delegate. If you have good people your task may not be burdensome.

But many LAs may need help. Of course LAs write quite a bit but also edit the CA contributions.

Remember this is an assessment and thus one does not simply review stuff and say A said this and B said that. Rather you make judgments about which is right and why the other one is wrong or incomplete or had poorer data or incomplete statistics etc. It requires discussion of the merits of papers. This is what good scientists do anyway and of course the outcome is that certain

avenues open up for further research. In that way you can encourage the LAs (and possibly the CAs), and some papers may actually result from this process. Each chapter will be given an initial target page length. Trying to keep to this is difficult and it does mean that some issues will not be covered. Perhaps there should be more scope for supplementary online material that is now available with many scientific journals. This was achieved with some chapters in the WG1 of AR4, but this material is often not widely read, as many look only at the hard copy reports.

2e. Review processes

This seems to work fine, although in our chapter we did have an extra review via all the CAs, which was good to get their buy in. It works now with help of review editors for the first and second order drafts, who were a valuable addition compared to previous assessments.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

This was OK scientifically but see next item

2g. Adoption of report by the IPCC plenary

The final versions of the three WG reports should really stand as a record of what the scientists wrote. The problem with the plenary is that for each SPM it is what is approved and therefore if subtle changes are made these have to be followed back through the WG reports. This is not an ideal process. The debate at the plenary meetings of the three WGs expands to fit the time available and some extra rules should be brought in. Basically if the scientists say something with a specific level of confidence, it should not be possible for the plenary to change this.

2h. Preparation of any special reports

Some of these can be useful but those that depend solely on the materials in the full reports (like the water one) have limited value.

3. What is your opinion on the way in which the full range of scientific views is handled?

It probably varies by chapter and WG. I think we did well with the chapter I was involved with for AR4 and one needs to recognize legitimate scientific views that are backed by sound science and papers in the peer-review literature. This is where assessment departs from a review perhaps. Some guidelines on insisting on open discussion of controversial topics and how conclusions are drawn is probably helpful.

It is imperative that controversial issues are discussed in the context of the peerreview literature and NOT as a result of incomplete pieces of work written on blog sites. This is going to become more of an issue with respect to AR5, so it does need to be addressed head on and in a consistent way across all chapters in all IPCC Reports. It needs to be made clear in revised IPCC rules and procedures that material from blog sites should not be used, and also not be used to determine what the controversial issues might be. Only the scientific literature can determine what these issues are. This also means exposing some issues and this can imply need for funding and

research. Within WG1 of AR4, for example, there was no chapter that looked at observational or modelling needs to be able to reduce uncertainties (see also #6).

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

It is helpful because it gets buy in to the product, but the approval process of the SPM needs revision.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Some grey literature is essential as there is nothing else, and some published literature may be dated. But it must be assessed by LAs and not just one LA, i.e. it basically gets reviewed by the team. If grey literature is looked at it should be published in reports. It should not mean looking at material published on blog sites.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

It has improved in each assessment but is still a challenge, especially in translating alternative views with appropriate weights. I have heard the view from some climate scientists that the IPCC likelihood nomenclature is poorly chosen. “High confidence”, according to the IPCC Guidance Note on Uncertainty means about 8 out of 10 chance of being correct. I would hardly call this “high” confidence! Similarly, “likely” was defined to mean that the likelihood of the outcome or result was > 66% probability. But really this isn’t much more than 50:50, yet it sounds much more when described as “likely”. Some criticisms and controversy of the chapter 6 conclusions about the climate of the last 2000 years are related, in my view, to the IPCC definition of likely. The chapter 6 author team assessed the evidence for past Northern Hemisphere temperatures to support statements that the recent period was “likely” warmer than other 50-year periods in the last 1300 years. This seems reasonable, given the knowledge of how “likely” is defined. But most people would assume that “likely” was much more certain than simply a bit better than 50:50! And because they interpret it to mean much greater likelihood/confidence than intended, it has resulted in extensive criticisms that the large uncertainties in estimating temperatures over the last millennium or two have been ignored or underplayed. I would think that a *scientific* statement described as “likely” would be at least 90% probable of being correct. And that > 66% should be “more likely than not”, 33% to 66% should be “about as likely as not”, and < 33% should be “less likely than not”. People expect scientific statements to be reliable, so even if in other areas of life people might use “likely” for > 66% probability, in science we should have a higher threshold.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

There should be a process in place and an erratum. So far errors are minor, but it may be possible

that they could be substantial and have ramifications for findings. Perhaps an example is sea level and glaciers in WG I of AR4? The science clearly evolves, even over the year or so between completion of the final draft and its approval by the plenary and subsequent publication. With the longer time delay between the WG Reports planned for AR5, there doesn't seem to be much need for the Synthesis Report. There will likely be important science issues that have evolved between the publication of the WG1 Report and the Synthesis Report – as the gap will be more than two years. Another example is how the four Assessment Reports have handled the course of temperature change over the past millennium. The First Report in 1990 produced a schematic, which many people still consider to be correct, despite subsequent reports citing more up-to-date work. Perhaps AR5 should this time restate that Figure 7.1 used in 1990 is not a valid reconstruction. It is clear to reasonable scientists that it isn't but it is still used today, to try and dilute the message of the later assessments.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

There was a free for all after AR4 but it seemed to work OK. What failed miserably was the IPCC response to “climategate” and subsequent errors and criticisms. They failed to point out and support the IPCC process and its rigor and some ways to do this must be implemented. The bureau is not equipped to do this and is not capable. The dismantling of TSUs after the AR4 was completed left a huge void. A core group of the co-chairs should be maintained as a council perhaps. The process also needs to recognize possible conflicts and failures (such as by the Chairman (Pachauri)). It is important for IPCC to be able to defend the process and particularly when individual CLAs, and LAs are attacked in the media. The chapters are the result of the writing teams and individuals should not come under attack (see also #11).

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

It has grown to become unwieldy and unduly burdensome on the community. It should be changed, but not substantially. Given that global warming is unequivocal, why continue? A series of more focused topics should be assessed and a lot of the reports should be made more operational (e.g. the updates of observations and what is happening and why (attribution), and model projections). Breaking the process into these two parts would be one way forward.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Changing the assessment to a more routine component and an assessment of more focussed topics would have funding implications. At present almost all CLAs, LAs and REs work voluntarily and are only paid expenses to attend the meetings.

11. Any other comments

Given lack of adequate support for LAs and CLAs (by IPCC) who have come under attack, why should anyone become an LA or a CLA? IPCC is at a critical point where it could collapse if it is

not better able to defend itself, especially its voluntary contributors. Finally, in some countries, some of the IPCC contributors have come under attack (not just in the media) but through national Freedom of Information (FOI) and Environmental Information Regulations (EIR) Acts. This is really an issue of academic freedom and it is probably beyond this review to tell IPCC (or indeed national governments) what to do about it, but some strong recommendations could be made. In the UK, LAs and CLAs have been asked for emails between the chapter author teams and also for drafts that are between those officially released for review. This is harassment of the scientists involved and if it happens again with AR5, I can see a number of good scientists withdrawing as they do not want all the hassle. A clear recommendation from this panel that they believe such action through national FOI/EIR legislation to be harassment would certainly help some respond to these continuing requests.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Government focal point, ex-officio member (observer) of the IPCC Bureau

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

This part of the process has evolved a lot during the history of the IPCC (e.g., deeper and wider consultation process). The only point I wish to raise is as follows: the decision making dilemma (both in terms of mitigation and adaptation) under the still remaining significant scientific uncertainties. Apparently, more science-based analysis would also be useful for the policy-makers on the wise use of the IPCC products. I mean the “knowledge” of a specific scientific branch on decision-making, however, I am not sure that this issue (decision-making science) should be dealt with directly by the IPCC.

2b. Election of Bureau, including Working Group chairs

It has remained a very critical issue. The situation (balance, lobbying, personalities etc.) was increasingly sensitive *after* the first two periods of the bureau chaired by B. Bolin, when the next bureaux were nominated and adopted (3rd one chaired by Mr. Watson, 4th and recently elected 5th bureaux chaired by Mr. Pachauri). There was some improvement a few years ago in the procedure and it is not an easy question what else could/should be done.

2c. Selection of lead authors

As it is primarily the authority of the bureau, it is less seen from outside. One of the basic points in the selection is the evaluation of the managerial skills *and* the scientific “prominence” of the nominees. Based on the outcomes (the relevant parts of the reports), in general, the selections proved to be very good, however, these outcomes in their final versions are the products of a

team (incl. the reviewers). The actual managerial performance of the LAs obviously can be better assessed by their team members.

2d. Writing of working group reports

no spec. comment

2e. Review processes

It is one of the key elements of the IPCC procedures which contributed essentially to the success and acceptance of the Panel and its products. The various levels of the review are well established, and it is also crucial that e.g. the refusal of the various comments should also be accompanied with arguments.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Again, it proved to be a very good idea to introduce these components of the assessment hierarchy. The IPCC sometimes criticized for the special nature and the special adoption procedure of the SPM, however, in my understanding it is a key document serving as a *bridge* between the sci. and the policy making community.

2g. Adoption of report by the IPCC plenary

Like the above point and my answer, I can characterize such a plenary as a meeting point of the science and policy. However, it is far from being perfect, I could also be witness to many cases when on certain points (paragraphs, figures in the draft document) there was a rather improvised debate sometimes on critical issues, judgements between the representatives of the two communities (basically, government delegates /backed by their national experts/ and IPCC bureau members). There is a need to improve this adoption process.

2h. Preparation of any special reports

no spec. comment

3. What is your opinion on the way in which the full range of scientific views is handled?

I agree with those who think that the “diverting” views represented by someone or by a sci. minority should also be somehow reflected/referenced if those are also correctly published. At the same time, it is also a huge responsibility of the IPCC if the decision-makers and/or the public will primarily focus on these “diverting” views.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

(i) even less direct interference with the sci. deliberations; (ii) more responsibility in the support of the background sci. activities, (iii) very good prep. for the science-policy interface from their

side (e.g. the adoption process of the assessment reports); (iv) better integration of the sci. recommendations in the pol. decisions, (iv) more careful approach to the multidisciplinary and geographical balance.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

(i) more procedural “guaranties” concerning the comprehensiveness, (ii) very careful approach to the non-peer-reviewed literature

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I see it correct how at present the uncertainties are demonstrated, however, the interpretation of these uncertainties and the interpretation of the way how those are presented need further thoughts. Actually, the various readers/users of these products (incl. the majority of the policy-makers) have a very different background, thus they can have a very different meaning of the IPCC messages, in particular those dealing with the uncertainties.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

no spec. comment

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

see above

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

No! It is far from being perfect, however, it is a very unique mechanism and process. There were/are similar attempts (GEO, Mill. Eco. Assessment, UNEP’s IRP etc), but still, the IPCC’s one seems to be “relatively sustainable”. Nevertheless, it should be improved in several aspects.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

no spec. comment

11. Any other comments

none

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead author, Coordinating lead author. Also reviewer of a special report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

From the reported proceedings, it seems that as governments themselves are involved in the IPCC meetings with climate change experts, the scoping and identification of policy questions has not been problematic. After the 4th Assessment Report, the comments from authors and other agencies on the future of the IPCC have proved useful in the scoping and identification process.

My main concern is how the IPCC authors would address some policy questions where there may be insufficient scientific knowledge and this could lead to some possible disagreement later. I suggest that such critical policy questions be highlighted and resolved at the first authors' meeting so that all chapters can make appropriate responses based on available scientific knowledge. The same goes with dealing policies on significant cross-cutting issues.

2b. Election of Bureau, including Working Group chairs

Each round of assessment has seen a better representation of countries from the developing world and this is inevitable. In the WG2 of the 5th Assessment Report there are alternate vice-chairs which signal that there is also a system of representation of available qualified members and of regions. As long as the members can devise a system that is democratic and agreeable there is no cause for external intervention.

2c. Selection of lead authors

Similarly, the selection of lead authors has been increasingly more representative of regions. This has sometimes resulted in qualified scientists, especially from developed countries, excluded as lead authors. In such cases, these specialists can be involved as contributing authors.

In my brief presentation to the IPCC Bureau members, I have suggested that the IPCC Secretariat designed a template with examples to show how a contributing author can provide an effective text box or one or more paragraphs of text. In the past, contributing authors tend to write too much and the material has to be severely trimmed.

2d. Writing of working group reports

If all chapters carried out their work diligently, there are few problems except for cross-cutting issues which should be resolved at the first authors' meeting. The first meeting is also important

where experienced authors can provide some insights for the new authors.

I would suggest a tighter writing procedure to eliminate the necessity of a ‘zero’ draft. With better planning and coordination, the process can do away with a ‘zero’ draft and start immediately on the first draft which can still be long but equally relevant. In other words, the writing process should start with the objective of producing a good and substantive ‘first’ draft for revision.

The establishment of a discussion portal before the first authors’ meeting for discussing issues would be useful. The scheduling of work tasks at each authors’ meeting is crucial especially with more cross-cutting issues.

2e. Review processes

The comments from experts, governments and review editors are definitely essential to the review process. While the major role of review editors is to ensure that the comments are addressed properly, their overview comments are equally important. For review editors, prior experience of the IPCC would be useful as they can provide insightful comments.

For improvement in the review processes, I would suggest that the reviewers, governments and review editors, identify certain comments as ‘critical’ and provide some elaboration. These would alert the chapter teams to put in extra efforts in responding to such comments.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

The SR and SPM are essential as policymakers normally do not have the time to read the entire report. It is essential to maintain consistency from the chapter to the SR and the SPM.

Technically, the SR and SPM are produced by the chairs/vice-chairs/secretariat with the CLAs serving as authors (who in turn have to consult with the lead authors). If possible, I would suggest that a draft SR and SPM be made available as soon as possible (probably a provisional template after the first draft) and revised alongside with the revision of the main report.

2g. Adoption of report by the IPCC plenary

Precious time was wasted by unnecessary comments at the last plenary and resulted in a rush to finish the report.

The procedures for the plenary should be clear even before the governments arrive for the meeting. All necessary papers, comments by the governments and the reviewers and suggested changes by the authors should be given to the governments for study and comments before the plenary. The plenary is to establish a consensus without backtracking to what is already evident in the documents.

2h. Preparation of any special reports

Special reports are useful for those working on the main report. If the findings of such reports have a bearing on the main report, e.g. type of scenarios, then they should be made available as soon as possible before the writing process.

3. What is your opinion on the way in which the full range of scientific views is handled?

I see a difference between a wide range of scientific views about climate change and the views that climate change does not happen. The former can be included and assessed appropriately but the latter is irrelevant.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The role of the governments depends on themselves – from participation at the IPCC meetings, comments on the report, and the final plenary. In the 4th Assessment Report, only 30-plus governments sent in their comments. Some did not hold national meetings to select their best candidates for the nomination process – thus there was a conspicuous absence of qualified people from some countries. Some governments did not do their homework prior to the plenary. The IPCC should emphasize to the governments to take their role seriously in the entire process.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Frankly, there is just too much literature, peer-reviewed or non-peer-reviewed, to be comprehensively handled by any one chapter. Perhaps, some basic rules can be followed. For peer-reviewed literature select only the most recent, comprehensive/review type papers, assess papers of different approaches/perspectives, and leave out many others dealing with details and examples (can be summarized in tables if necessary). Non-peer-reviewed literature (to be deposited with the secretariat) should be given a thorough evaluation by more than one member of the chapter. Controversial issues should be discussed and reviewed openly within chapters or between chapters (e.g. inclusion of some extreme values and its rationale). (See above comments in 'e').

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

So far there has been no strong negative reaction on the characterization and handling of uncertainty as there is a common terminology. Authors have to be careful when using the terms. The common qualitative terminology is preferred over statistical statements which may give a wrong impression of precision.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

For such a monumental task, some errors are bound to be expected, either through insufficient

checking, misinterpretation, etc. The IPCC has handled well the situation despite the pressure put on by the press.

Personally, I think the press was trying to create more mischief when it asked the following questions:

- “1. Do you have concerns about science, data or claims presented in the final draft of the IPCC AR4 report? If so, please detail.
2. Clearly the recent revelations and apology have dented public confidence in the IPCC's process, what can the IPCC do to restore confidence in its findings for future reports?
3. Do you still have confidence in the chair and vice-chairs of the IPCC or should they stand down from their positions? Please also give a short explanation for your answer?
4. Should the AR4 be reviewed in detail to check for other errors, particularly given that it is a document designed to help governments and officials make policy decisions that can impact both the environment and on people's lives?”

For the next assessment report, the authors and review editors will have to be more conscientious of potential and critical issues that may come into possible dispute.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

As the IPCC faced data quality assurance issues for the first time, there were some initial hiccups in the response. Overall, the communication process has been sorted out and standard procedures have been put in place to handle such issues in future.

A standard procedure of crisis handling is to treat the first 12 hours as crucial – there should be a mechanism at the secretariat to issue immediately a short statement to say that the problem is being looked into. Then update the statement when necessary, and provide a full explanation as soon as possible.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

As the IPCC is an intergovernmental organization, its sustainability depends very much on the governments who are the members. Scientists cannot change the structure although they are responsible for the information. Since its formation, the IPCC has generally shifted its attention from ‘science’ to ‘policy’.

What I fear in future is that the ‘business’ (already seen in carbon trading and related schemes and their growing literature) would become more dominant. In such a situation, the IPCC becomes redundant as we are not tackling climate change but only delaying through financial mechanisms. Governments and other international agencies should focus and promote direct mitigation and adaptation measures and not get involved in promoting temporary measures.

10. Do you have any suggestions for improvements in the IPCC management, secretariat,

and/or funding structure to support an assessment of this scale?

Perhaps more funds should go into the outreach programme so that the information is widely disseminated to various groups/stakeholders especially in developing countries. The message must be conveyed convincingly to them so that adaptation action can take place. For example, there is a need to produce readable versions of the SPM for the average person or simple guides on adaptation measures.

As the management of information is the key in the IPCC writing process, perhaps improvements can be made to the distribution of more essential information, e.g. revision of some scenarios. CDroms and thumb-drives should be used readily for the diffusion of information from the secretariat. This would cut down the duplication of efforts by chapters and authors.

11. Any other comments

There is plenty of discussion relating to mitigation measures which revolve around who are responsible for the GHGs emissions, cutting back the emissions and funding the mitigation measures. For adaptation, one important issue relates to the models and what can happen in future. Much funding has been spent on modelling and then policymakers may not be convinced of applying the measures because of the projected numbers on impacts.

I would like to see more funds devoted to putting adaptation measures in place which are more convincing to the policymakers. For example, small islands are in danger of inundated by a rising sea level. Adaption measures should be implemented to show what can be done. Basically, we need more demonstration-type locations of workable or practical adaptation measures in various sectors to convince policymakers and other stakeholders of what can be done while the projected numbers on climate can still change.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Contributor, reviewer, Convening/Coordinating Lead Author, Lead Author (chapters, Technical Summaries, Summary for Policy Makers, Synthesis Report), Member of scoping teams, participant in SPM and synthesis report approval meetings

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Mostly, seems OK as long as there is flexibility for LAs to modify the outlines where desirable. At the AR5 scoping one of the WG I chairs was particularly obdurate and the desires of the meeting were not carried through into the outline, especially related to water resources (a cross

cutting issue for all 3 WGs).

2b. Election of Bureau, including Working Group chairs

I don't know much about this, it seems highly political not scientific.

2c. Selection of lead authors

Mysterious: nominations go in but then? For WG I, AR4 I know there was some consultation with quite a few people. Seems less so for AR5. Seems like this should be more a group effort, but a small group and not just the co-chairs (or is it?). There are far too many politically correct appointments, so that developing country scientists are appointed who have insufficient scientific competence to do anything useful. This is reasonable if it is regarded as a learning experience, but in my chapter in AR4 we had half of the LAs who were not competent. It put a huge burden on the CLAs.

2d. Writing of working group reports

Extra guidelines would help. I have been asked by prospective CLA about this for AR5 and I offered the following as a first step:

- Ask what chapter it is and ensure you look hard at the scoping outline that has been approved. Look also at the other chapters to ensure that pieces are not missing.
- Then ask who are the lead authors you would work with and what are their credentials?
- The first job is typically to go through the outline and add an extra layer of subheadings and detail. There are some possibilities for modest changes in the headings you have been given. This outlines the expertise you will need.
- As CLA you should delegate everything you can. So the chapter is then divided up into sections that each LA is responsible for. It should be a rule that there are always at least 2 LAs responsible for each section although one should be in charge. The second provides a cross check on the first. However, this also depends on the skill and expertise mix. Having a veteran with a novice; having a developed country scientist with a developing country one, etc.
- Do not patronize the developing country scientists but do give them tasks they are capable of or have them work with another LA.
- Thus develop an annotated outline with all the subheadings and a list of LAs responsible for each bit.
- The LAs are responsible for the whole chapter: their name is on it, but in practice many will only do their part. The CLA is really responsible for the whole things and so it is best if others do the pieces and the CLAs do the assembling and integrating. CLAs also help out where required. Hence the need to delegate as much as possible.
- The next task after assigning topics to LAs, is to go through and decide on contributing authors who are asked to write up to a page or so on a very specific topic and provide references and a figure. One should also get contributions from skeptics and alternative views and make them part of the process. If those views have substance then they have to be discussed. This serves to blunt criticisms that might come later.
- The LAs serve as the editor of these pieces and makes first cut. To be responsible, one can

later send the edited section back to the CAs so they can see what was done to it and get buy in.

- Figures are one key aspect and to the extent possible get the data for the figure rather than the figure, and get updates if it is about observational data.
- An important stage is to go through in developing the zero order draft and decide on which figures are best.
- The zero order draft goes to friendly colleagues selected by the TSU; the first order draft goes for expert review and the second order draft goes for government review, leading to the final version. In our case, we sent the zero order draft to all CAs for comment (we were the only chapter to do so).
- The main task of the CLA is to make the others work for him/her; that is one way to view the task: delegate. If there are good people your task may not be burdensome. But many LAs may need help. Of course, LAs write quite a bit but also edit the CA contributions.
- Remember this is an assessment and thus one does not simply review stuff and say A said this and B said that. Rather you make judgments about which is right and why the other one is wrong or incomplete or had poorer data or incomplete statistics etc. It requires discussion of merits of papers and the conclusions must be backed by evidence. This is what good scientists do anyway and of course the outcome is that certain avenues open up for further research. In that way you can encourage the LAs, and some papers may actually result from this process.

2e. Review processes

This seems to work fine, although in our chapter we did have an extra review via all the CAs, which was good to get their buy in. The review process works now with help of review editors, who were a valuable addition vs previous assessments, where the editors of the volume did not do their job.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

This was sort of OK scientifically but see next item on the process. A lot of important detail and caveats can get lost at this stage.

2g. Adoption of report by the IPCC plenary

This is an awful procedure and should be changed. It has far too much politics and the final version has little relation to the one suggested by the scientists. The debate expands to fit the time available. Extra rules should be brought in. While the scientists ensure that what is there is accurate, the balance can change and the overall message can get distorted.

2h. Preparation of any special reports

Some of these can be useful but those that depend solely on the materials in the full reports (like the water one) have limited value.

3. What is your opinion on the way in which the full range of scientific views is handled?

It probably varies a lot by chapter and WG. I think we did fine and one needs to recognize legitimate scientific views that are backed by sound science and papers. We adopted an open discussion of all issues and did not try to hide or ignore any. This is where assessment departs from a review perhaps. Some guidelines on insisting on open discussion of controversial topics and how conclusions are drawn is probably helpful. It means also exposing issues and this can imply need for funding and research.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

It is helpful because it gets buy in to the product, but the approval process of the SPM needs revision.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Some gray literature is essential as there is nothing else, and some published literature may be dated. But it must be assessed by LAs and not just one LA. i.e. As long as it basically gets reviewed by the team it should be OK. This also implies that the team is competent to judge (which is not always the case when WG II covers WG I material).

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

It has improved in each assessment but is still a challenge, especially in translating alternative views with appropriate weights. Some flexibility is desirable. It must be recognized that it is often impossible to properly characterize uncertainty. In WG I uncertainty estimates are often available but often they do not bracket the different results from other groups. Structural uncertainty is typically underestimated.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

There should be a process in place and an erratum. So far errors are minor, but it may be possible that they could be substantial and have ramifications for findings. Perhaps an example is sea level and glaciers in WG I? Nonetheless the likely problems in this area were openly discussed. The science then evolves. However, the way the errors in WG II were handled in AR4 was abysmal. The charges about the paleo data record (related to Phil Jones “trick” in the stolen emails) have been absurd as the issues there were fully discussed in the paleo chapter.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

There was a free for all after AR4 but communication of the outcome seemed to work OK. What

failed miserably after AR4 was the IPCC response to *climategate* and subsequent errors and criticisms. IPCC did not respond promptly. They failed to point out and support the IPCC process and its rigor, and some ways to do this must be implemented. The bureau is not equipped to do this and is not capable. The dismantling of TSUs after the AR4 was completed left a huge void. A core group of the co-chairs should be maintained as a council perhaps. The process also needs to recognize possible conflicts and failures (such as the very bad failures by the Chairman (Pachauri)).

Previous problems occurred after the SAR related to Ben Santer and the attribution chapter, and edits that were not overseen by Sir John Houghton or his team. The subsequent crucifying of Santer was terrible and IPCC was missing in action.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

It has grown to become unwieldy and unduly burdensome on the community. It should be changed. Given that global warming is unequivocal, why continue? A series of more focused topics should be assessed and a lot of the material in the reports should be made more timely and “operational” and routine (e.g. the updates of observations and what is happening and why (attribution), and model projections). Breaking the process into these two parts would be one way forward. Already there is now an annual special issue of the *Bulletin of American Meteorological Society* providing an update of the climate of the past year. This has become better but still is far from IPCC standards. But it is essential if decision makers are to work with the latest information. Some aspects of IPCC are valuable but the whole process is obsolete. Declare success and move on to a new model.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Changing the assessment to a more routine component plus an assessment of more focused but different topics would have implications for the whole operation. See above for the need for some continuity between assessments.

11. Any other comments

Given lack of adequate support for LAs who have come under attack, why should anyone become an LA? IPCC is at a critical point where it could collapse. Commentaries exist on this in several places, including my web site.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Government focal point, Coordinating Lead Author, Review Editor, Reviewer

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

I have contributed to and experience with the Working Group I (WgI) assessment, but only limited experience with the assessment processes of the other Working Groups

2a. Scoping and identification of policy questions

In WgI the assessment process starts with the scoping and identification of **scientific** questions, **not** of policy questions. This is done by a broad range of scientists, invited by the Wg Bureau through a.o. governments and participating organizations to special scoping meetings. My experience is that this scoping process results in a balanced and well composed proposal for the structure and contents of the next report, covering the important questions and issues that have arisen in recent years.

Strength: the scoping process leads to a well structured and balanced report

Potential weakness: the selection of scientists invited to participate in the scoping process might lead to a one-sided, unbalanced, report if the selection would take place within a more or less closed inner circle of IPCC-related scientists. An open invitation and selection procedure, f.e. carried out by Academies of Science, could avoid this potential weakness.

2b. Election of Bureau, including Working Group chairs

IPCC being an intergovernmental organization, the election of the Bureau by the Council is of necessity a partly political process. According to the rules, Bureau Members shall be experts in the field of climate change and all WMO-regions are to be represented in the IPCC Bureau but a certain degree of political influence is unavoidable. F.e. the chairperson of IPCC, who also chairs the Bureau, needs the support of the developing countries.

The Working Group co-chairs are also formally elected by the Council but the actual influence of the Council is limited because the country that offers to host the Working Group's Technical Support Unit proposes the chairperson and it is difficult for the Council to deviate from that proposal. The past WgI co-chairs, in particular those from the developed country, have all been highly respected and competent scientists.

Strength: the election process is a well established UN process that leads to a generally accepted governing body

Weakness: some people feel that politics should not play a role in a scientific organization like IPCC. I am not of that opinion.

2c. Selection of lead authors

A (Co-ordinating) Lead Author has a demanding, time and energy consuming task. Not all scientists are prepared to carry out such task on top of their normal scientific work. The risk is

that Lead Authors are selected from a more or less closed inner circle of IPCC-related scientists. I would prefer a more open selection procedure. This could perhaps be achieved by involving or giving the lead to the Academies of Science. Selection and invitation by an Academy of Science would perhaps be more “objective” and authoritative and more difficult to refuse.

2d. Writing of working group reports

My experience with the writing process in WgI is very positive. It is a very open process in which authors are prepared to criticize and listen to each other and to consider carefully the viewpoints of reviewers and also those of the so-called skeptics. I have never experienced any political influence in this process that takes place during various Lead Author Meetings and, in between such meetings, via exchange of drafts, email discussions etc. The strength of the process is an open scientific attitude. I find it difficult to see any weaknesses. It is important to have a strong, scientifically highly competent, chairperson. WgI has had the good fortune of having such excellent chairpersons.

2e. Review processes

The review process is very extensive, with an informal review of the 0th order draft and two formal reviews of the draft, all three of those involving many reviewers. My experience in WgI is that the comments of reviewers are considered seriously. Drawbacks are the enormous volume of reviews, the fact that the names of the reviewers are not kept secret, and the not very clear way by which reviewers are selected. I would prefer a much smaller number of reviewers, selected from a range of disciplines including the skeptics, whose names are kept secret. The review process could perhaps be led by an institution outside the IPCC, f.e. the Academy of Science of the host country of the Working Group.

The introduction of Review Editors has been a considerable improvement. At present Review Editors are not obliged however to report to the Bureau or the Council about their findings.

Strength: the review process is very extensive with many people critically examining the texts.

Weakness: the volume of reviews is great, the risk of oversights and errors is large; the selection procedure of reviewers is unclear; Review Editors should be obliged to report to Bureau or Council in all cases.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

The Synthesis Report and its SPM is a serious attempt to combine the assessment results of the 3 Working Groups into one report. It is not clear however who is the target group for this report. Many policy makers will find it too complicated. The Synthesis Report itself is already a combined summary of the 3 Wg-reports. I don't see the need for an SPM of the Synthesis Report

2g. Adoption of report by the IPCC plenary

This question is not clear. Which report is meant here? The Working Group Report is accepted by

Plenary; the Synthesis Report is adopted by Plenary, and the Summaries for Policy Makers are approved by Plenary. The definitions of these terms can be found on the IPCC website: <http://www.ipcc.ch/pdf/ipcc-principles/ipcc-principles-appendix-a.pdf>

The strength of these seemingly complicated procedures is that Countries see themselves as owners of these reports. The SPM f.e. is a scientifically correct and reliable summary of the main report and at the same time line-by-line approved by the intergovernmental plenary. I find this one of the strong and also beautiful aspects of the intergovernmental mechanism.

2h. Preparation of any special reports

I have had no first-hand experience with or involvement in the preparation of special reports. The procedures for their preparation are not different from those for the main reports.

3. What is your opinion on the way in which the full range of scientific views is handled?

My experience in WgI is that to the extent possible the full range of scientific views is dealt with, including sceptic views that have been presented and published in a scientifically acceptable and accessible manner. In such an extensive field of scientific knowledge as this one there may always be omissions or discussions about whether or not some results should be assessed, but in general IPCC offers a comprehensive review and assessment of the relevant scientific literature.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The intergovernmental IPCC operates on the scientific side near the sharp edge between science and policy. In my opinion this is one of the beautiful aspects of IPCC: the IPCC process produces comprehensive and scientifically reliable reports, covering the full range of scientific certainty and uncertainty: “policy relevant but not policy prescriptive” is the IPCC adage. At the same time the reports are accepted and owned by the governments and difficult to ignore: they themselves have accepted the reports and approved the SPMs. Take away the role of the governments, and the reports will be ignored and marginalized. Of course there is a risk of politicizing the IPCC process, but the careful application of the rules of procedures has so far avoided that risk, certainly in WgI.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

I don't think the selection of the “sources of data” can be improved. It is up to the Co-ordinating Lead Author, together with his/her Lead Authors, to decide which literature should be assessed. For the use of non-peer-reviewed literature IPCC has strict rules. The Review Editors could be asked to check if these rules are adhered to and to report any breach of the rules.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Any attempt to characterize or quantify uncertainty has drawbacks because information comes from a wide range of disciplines, each with their own culture and their own way of dealing with uncertainties. Moreover very often uncertainties cannot be quantified objectively and therefore a certain degree of subjective judgment is unavoidable. With this in mind, the present system of expressing uncertainty in terms of confidence and likelihood seems to work reasonably well, be it that the three Working Groups each use their own combination of confidence and likelihood judgments. An attempt to further unify the handling of uncertainty would be wise, keeping in mind the different disciplinary backgrounds of the Working Groups.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The quality of the data used in the assessed literature is a matter of confidence and knowledge, given the fact that the assessed literature has passed a peer-review process and that the Lead Authors themselves know the data sources from their own experience. The handling of data quality assurance and quality control should be left to the CLAs .

The use of non-peer-reviewed literature poses a problem in this respect because the quality of the data is not assured. Strict adherence to IPCC's rules and making explicit reservations concerning the quality of non-peer reviewed data is essential. CLAs and IPCC in general should avoid basing important conclusions on non-peer-reviewed literature without carefully checking the quality and without reporting the source of the data.

IPCC should keep a publicly accessible file of corrections and rectifications of errors discovered after publication. IPCC should be completely transparent in this respect.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

In their communication with the media and the general public, there is perhaps sometimes a tendency to overstate IPCC's conclusions by underrating the uncertainties and to suggest political consequences of IPCC's findings. In its communication to the outside world, IPCC should always present its conclusions carefully, including uncertainties, and avoid any political conclusion.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

From the above it should be clear that I support the present IPCC assessment model, including the intergovernmental nature of IPCC. Improvements could be made in details such as the review process or the communication with the public and the policy makers, but the assessment model should be kept as is and should serve as a model for the assessment of other environmental areas of concern.

10. Do you have any suggestions for improvements in the IPCC management, secretariat,

and/or funding structure to support an assessment of this scale?

The funding of IPCC, being based on voluntary contributions of participating countries, has always been a problem. I think that a funding scheme based on voluntariness is insufficient and also unreasonable. It should be based on either compulsory contributions based on the UN scale, or IPCC should be financed entirely through the UN, perhaps through WMO.

II. Any other comments

IPCC has served the international community very well since its foundation by using and developing an interesting and also beautiful model of strict scientific standards within an intergovernmental environment. Of course quality standards could and should be further improved, but in this massive assessment process errors are unavoidable. The minor errors discovered recently should be corrected but should be no reason to fundamentally change or annihilate this assessment model.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Contributor, Lead Author (chapters, Technical Summary), Drafting Author for the Summary for Policymakers, Coordinating Lead Author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Strengths: The Synthesis Reports organized by explicit question is a good way to scope and identify the policy questions relevant to the governments.

Weaknesses: The Plenary Approved Outline process doesn't function very well because the governments sometimes require the scientists to cover topics that are not covered by enough literature.

Recommendation: There needs to be feedback during the process between the Author Teams and the Bureaus on what is working in the PAOs and what is not.

2b. Election of Bureau, including Working Group chairs

No comments.

2c. Selection of lead authors

Strengths: Author teams are formed with balanced representation from developed and developing

countries, gender, etc.

Weaknesses: The subjects covered by Working Group II are broad, and it is difficult to cover all of the needed areas of expertise with a small team of lead authors. Because of the emphasis on geographic and political diversity, often the lead experts are not as optimally diverse in terms of their expertise. Contributing Authors are supposed to fill these gaps, but these gaps can be wide and the CAs are not really engaged in the full process. Another weakness relates to the lack of indigenous authors. This is a challenging area, but one that needs to be addressed with IPCC guidelines.

Recommendations:

- 1) Ensure that the lead author team covers all major subject bases in the chapter in terms of their own expertise.
- 2) Indigenous knowledge leaders should be added to relevant author teams.

2d. Writing of working group reports

Strengths: The staggered time period for AR5 is helpful, but there should be even more time between WGs I and II because the climate scenarios are not published early enough for WGII scientists to do their work and publish the results.

Weaknesses:

- 1) Working Group II covers too broad a spectrum of material.
- 2) Literature in other languages is often not included.

Recommendations:

- 1) Working Group II should produce two separate parts of its Assessment: One for Sectors and one for Regions.
- 2) The time between Working Group I and II Reports should be even more staggered – up to 2 to 3 years. This would truly allow a critical mass of WGII literature to develop and for the WGII Report to stand more on its own.
- 3) IPCC needs to provide multi-lingual for support for author teams to translate key literature and support authors for whom English is not the first language.

2e. Review processes

Strengths: The review processes gathers a wide swath of academic and government experts and does make the IPCC documents very strong.

Weaknesses: Responses to reviews are not available until after the process is complete.

Recommendations:

- 1) A larger team of Review Editors should more pro-actively serve to ensure that all review comments are answered in a satisfactory manner.

- 2) Process should be more like peer-review process in which the responses are returned to the original reviewers for further comment if any. If the reviewer does not feel it is answered adequately, he/she is free to respond at that time.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Strengths: The Synthesis Reports organized by explicit question is a good way to scope and identify the policy questions relevant to the governments. The TAR process worked better than AR4.

2g. Adoption of report by the IPCC plenary

For Working Group II AR4, there was simply too much material to cover in five days. This needs to be planned in a much more realistic way.

2h. Preparation of any special reports

No comments.

3. What is your opinion on the way in which the full range of scientific views is handled?

I believe they are well represented. Review Editors serve as the arbiter to make sure that differing views are incorporated.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Sometimes the governments push for changes that are not supported by the scientific literature – usually for political reasons. It is important that scientists are backed up when they disagree with such changes.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

For Working Group II, there is important information to assess in some non-journal-based but still peer-reviewed sources, such as technical reports. The term ‘grey literature’ should be abandoned. The literature is either ‘peer-reviewed’ or it is not; or journal-based or not.

Adaptation is increasingly occurring on the ground and being reported in non-journal-based literature. If WGII cannot assess this broad range of literature, its assessment will not be at the cutting-edge.

I also believe that encouraging studies in the developing world is very important to future IPCC Working Group II reports.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

A Guideline Document should be agreed on at the beginning of each Assessment Report, agreed on by the Working Groups and disseminated and discussed widely.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

A process should be put in place to handle each query as it arises. When errors are judged to have been made, errata should be published on the IPCC website. However, it should also be clear that not every scientist whose work is assessed will agree with the representation of his/her work in the IPCC Reports. Thus, there also needs to be a procedure in place to respond to this type of ‘disgruntled’ scientists.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Media interactions with authors need to be coordinated along with timely response. Also, the media needs to have a better understanding of the IPCC process.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The IPCC Assessment process is focused on national policymakers involved in the UN Framework Convention on Climate Change. However, it should be recognized that the IPCC Reports cannot provide information for all levels and types of stakeholders, so other assessment processes should be allowed to develop. For example, I believe that a parallel Assessment Report, the Assessment Report on Climate Change and Cities (ARC3), should be created that provides focused information for stakeholders in cities, who are emerging as the ‘First Responders’ to climate change in both mitigation and adaptation. The IPCC as it stands now has simply become too broad to answer all the assessment needs of different types of decision-makers.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Post-docs should be funded for all of the CLAs. The Secretariat should be fully staffed and supported.

11. Any other comments

All authors should sign a statement disclosing their potential conflicts of interest.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

CLA, IPCC Bureau member

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

OK

2b. Election of Bureau, including Working Group chairs

OK

2c. Selection of lead authors

OK

2d. Writing of working group reports

I guess that more meetings will help, specially small meetings gathering only the CLAs and LAs for each chapter without plenary sessions. It would be also important to have at least one person dedicated full time for each chapter and its interactions. Usually the authors are very busy and lots of important gaps and overlaps happen.

2e. Review processes

Up to now this is the weakest part of the process. The role of the reviewer is almost bureaucratic. As in my previous comment In my opinion each chapter should have a full time dedicated reviewer.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

OK

2g. Adoption of report by the IPCC plenary

OK

2h. Preparation of any special reports

OK

3. What is your opinion on the way in which the full range of scientific views is handled?

Giving more support to developing countries participation. Not only for meetings attendance, but for their institutions, for publishing papers so that the research from their institutions could be considered in the report. Different results and controversies should have a place on the report in order to highlight to the public the areas of conflicts and lack of consensus.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I would keep the way it is now, in other words, at the SPM approval and scope approval.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

In my opinion using non-peer-reviewed literature might be too risky so I would prefer to support the publishing of this kind of literature, even producing an IPCC editorial group to organize the peer-review.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

It was well handled.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

In my opinion it was a delay on the reaction. As to quality control I suggest that IPCC should have dedicated reviewers for each chapter of each report. Voluntary job is not always reliable considering dedication.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I don't have a clear position in that.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Only the suggestions I've already made. Maybe a permanent scientific staff, at least during each report cycle.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

No

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Review Editor

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

The review process is sound and thorough. From the perspectives of our chapter:

- reviewers were sought from all the authors and editors.
- The reviewers represented a wide range of organizations, disciplines and backgrounds.
- Every comment was carefully logged, assessed by the chapter team and the action taken documented. The chapter team was very professional and conducted a careful and impartial assessment of each comment.
- In the end, and because of the large number of comments and short period of time, the review editor had to rely on the authors to take the necessary actions relating to the comments. I felt perfectly confident in relying on the author team, although this does point to the need for more time at this stage for review editors to check final versions of chapters against the comments received.

I am not sure whether persons providing comments on the different drafts are thanked for their comments and told that they have been fully considered and incorporated where appropriate. If this is not done as a standard practice then perhaps it should be, because persons providing comments on subsequent drafts may wonder why their comments have not been taken on board.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

The review process allows for incorporation of a wider scientific view, however, I think there needs to be more interaction between related chapters, especially during the meetings to prepare the various drafts. Interaction is usually done informally between scientists who know each other, but for instance in AR4, Vol 2 report, I think more organized interaction between the Small Islands and Coastal Chapters would have been beneficial – this could have taken the form of short meetings at the beginning of each day to discuss areas of overlap between the chapters.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Especially when it comes to the developing world, and small islands in particular, the shortage and in some cases absence of peer reviewed literature is a serious disadvantage. I am of the opinion that non-peer reviewed literature (from reliable sources e.g. UN reports) should be accessed and referenced in IPCC reports, however when referred to in the text it should be noted that this source is non-peer reviewed, and the weight given to the information should be duly adjusted.

My recommendation is that in areas where there is no other literature, then non-peer reviewed literature should be used and referenced in IPCC reports, although it should be noted that the source has not been peer reviewed.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

There is a need for further work and improvement here because the problem of uncertainty, particularly when conveying the information to the public is massive.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I do not think the IPCC communicates well with the general public. The website, size of the assessment reports and content of the summaries are not easy reading or user friendly for the public.

My recommendation is for the IPCC to have a separate website, managed by communication specialists with expertise in science writing, to succinctly and concisely explain, in easy (and accurate) language the contents and findings of assessment reports and other major documents published by the IPCC. I recognize that this is a significant undertaking in terms of cost – but it is very much needed. When people in small islands ask me where can they get authoritative and

factual information about climate change, I am loathe to direct them to the IPCC website because it is so difficult to navigate, it is not user friendly and the content does not answer the needs of the general public.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Basically I think the process is sound. However, the delay factor is becoming more and more serious given the current interest in climate change, and the speed at which the science is moving. The gap between the 4th and 5th assessment reports, nearly 7 years, is too long. I recommend that the maximum time between assessment reports be no more than 5 years.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Government Focal Point

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Forces: Les impacts du climat sur le développement socio-économique des pays depuis l'ère industrielle posent la problématique d'une évaluation de l'évolution du climat et des mesures pour y faire face. Ce qui nécessite une prise en compte des questions politiques à court, moyen et long terme pour une meilleure mise en œuvre des actions appropriées protectrices de l'environnement.

Faiblesses: La meilleure organisation des pays développés peut souvent influencer sur les discussions pour les prises de positions.

Recommandations: L'équité doit prévaloir dans les discussions.

2b. Election of Bureau, including Working Group chairs

Forces: L'élection des membres du bureau et des présidents de groupe ainsi que des membres de groupe I, II, III se fait conformément aux procédures et règles établies et adoptées au sein du GIEC. Cette élection se fait en plénière en tenant compte de la répartition géographique, de la

représentativité des Pays développés et des Pays en développement suite aux candidatures soumises au GIEC.

Faiblesses: Certaines candidatures viennent des institutions indépendantes, ce qui pourrait poser le problème de la représentativité et de l'implication des pays. La lenteur dans le remplacement des membres non disponibles peut aussi jouer sur les prises de décisions.

Recommandations: Prendre en compte uniquement les candidatures soumises par les pays . Ce qui est même inscrit dans les règles et procédures du GIEC. Mettre en place un système de remplacement rapide des membres non disponibles afin d'éviter de perdre du temps dans les sessions.

2c. Selection of lead authors

Forces: La sélection des principaux auteurs suit les mêmes procédures que les membres du Bureau à la différence que chaque Groupe (I, II, III), conformément aux chapitres du rapport d'évaluation procède à la sélection des principaux auteurs et présente à la plénière du Bureau pour adoption.

Faiblesses: Les règles de sélection sont **très strictes** (PhD, Publications sur Google etc..) empêchant souvent les candidats des pays en développement notamment ceux d'Afrique d'être sélectionnés. L'Afrique est souvent absente dans les études scientifiques.

Recommandations: Revoir le niveau de sélection à la **Maitrise** et tenir compte de la littérature (Rapports, Mémoire, études au niveau national etc.), de l'expertise afin de favoriser l'implication forte des pays en développement.

2d. Writing of working group reports

Forces: La rédaction de rapport de groupe de travail se fonde sur la documentation disponible (études, recherches, articles, publications, revues etc..), les expertises et les témoignages. Les échanges entre les experts et au sein des groupes permettent d'analyser les questions fondamentales et de proposer un draft pour adoption.

Faiblesses: Le travail de **bénévolat des auteurs** notamment des **pays en développement** peut peser souvent sur la qualité de l'analyse approfondie des questions.

Recommandations: Mettre en place un mécanisme de motivation des auteurs afin d'améliorer la qualité des produits.

2e. Review processes

Forces: Le partage des points de vue reste de rigueur pour le processus. Aussi toutes les institutions, organisations et ONGs admises comme observateurs sont aussi invitées à donner leur point de vue sur tous les rapports du GIEC.

Faiblesses: La disponibilité des rapports en **anglais uniquement**, ainsi que les discussions dans les groupes de contact en anglais ne favorisent pas l'implication des pays non anglophone.

Recommandations: Renforcer le système de traduction et d'échanges.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Forces: Le rapport de synthèse et le résumé pour les décideurs préparés par les groupes de travail sont analysés, amendés et adoptés par la plénière du GIEC avec la participation de institutions, organisations et ONGs admises comme observateurs au sein du GIEC..

Faiblesses: Cette préparation se fait au niveau des auteurs d'abord.

Recommandations: Impliquer les pays dans tous le processus.

2g. Adoption of report by the IPCC plenary

Forces: L'adoption du rapport en séance plénière se fait par consensus après une analyse approfondie par les Points focaux et propositions d'amendements.

Faiblesses: Cependant l'adoption des rapports se fait souvent à **des heures tardives 2h, 3h, 6h du matin** empêchant certaines délégations de participer aux débats. Le temps aussi imparti pour l'adoption est souvent court.

Recommandations: **Éviter les heures tardives des séances et prévoir le temps nécessaire pour les sessions.**

2h. Preparation of any special reports

Forces: Communication des rapports et partage d'informations lors des plénières.

Faiblesses: Sélection de nombres insuffisants de participants pour les ateliers

Recommandations: Impliquer tous les pays dans la préparation en utilisant les courriers électroniques.

3. What is your opinion on the way in which the full range of scientific views is handled?

Une satisfaction pour l'éventail complet des vues scientifiques , cependant il serait souhaitable d'impliquer suffisamment les pays en développement.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Les gouvernements jouent un rôle d'appui conseil et de facilitation.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

L'amélioration des sources de données reste toujours nécessaire afin d'améliorer la qualité des études. Mais cela dépend aussi de la responsabilité des experts choisis et de leur degré d'engagement.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

La manipulation et la qualification des incertitudes relèvent de l'interprétation et de l'objectif visés par les pays et les médias. Il revient au GIEC de mieux expliquer les contextes d'usage dans les rapports afin d'éviter toute manipulation à d'autre fin.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Immédiatement après l'adoption des rapports, le GIEC doit mettre en place un comité de relecture dans toutes les langues de travail avant publication. Aussi un erratum doit être publié dans les **six mois qui suivent**.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Le GIEC doit élaborer une stratégie de communication impliquant les points focaux au niveau national.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Le GIEC doit rester le seul modèle d'évaluation afin de maintenir la cohérence, de poursuivre et de renforcer les actions entreprises.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Le Secrétariat du GIEC doit être renforcé en moyens humain, matériel et financier pour faire face à sa mission qui devient de plus en plus importante et exigeante.

II. Any other comments

Si le GIEC n'existait pas, il fallait le créer afin d'être conscient aujourd'hui de l'évolution du climat et de ses impacts et donc de la menace climatique.

L'appui constant de l'OMM et du PNUE ainsi que les Pays et d'autres institutions reste

nécessaire pour le GIEC.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Participant in all processes (scoping, nominations, review, acceptance etc.)

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

strengths – government representatives, decision by consensus.

weaknesses – no adequate interest from some countries to the issue

2b. Election of Bureau, including Working Group chairs

strengths – decision by consensus during all steps

weaknesses – Language barrier within regional groups

2c. Selection of lead authors

strengths – address to all governments

weaknesses – no adequate interest from some (developing and E.T.) countries because of absence of financing

2d. Writing of working group reports

2e. Review processes

strengths – address to all governments

weaknesses – no adequate interest from some (developing and E.T.) countries because of absence of financing

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

strengths – government representatives, decision by consensus.

weaknesses – time shortage, not effective discussions

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Awareness arising

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

CLA, LA. Also CLA of a Special Report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

It would be desirable to have more clear delineation between the "political" and scientific parts of the process. Right now, the SPMs are negotiated line-by-line and the underlying report is supposed to be made consistent with the negotiated SPMs. There are two alternatives I can imagine: One is that governments could negotiate their own interpretation of the underlying

report in form of SPM that would not require any changes in the scientific assessment. Second, governments could pose questions and give suggestions in the concluding plenary for the SPMs. Subsequently, government comments could be collated and integrated in the SPM and the underlying report by the LAs with the guidance of Review Editors

2a. Scoping and identification of policy questions

IPCC is not allowed to be policy prescriptive. This was appropriate in the days when the primary focus of the assessments was on attribution of climate change, assessment of impacts and mitigation possibilities. In the meantime, climate mitigation and stabilization policies have been adopted around the world. The ideas of "green growth" and sustainability transition are now pervasive. All of these developments require policies and measures. Thus, IPCC should be allowed to look at portfolios of prescriptive policies and measure directed at achieving particular climate and development goals.

2b. Election of Bureau, including Working Group chairs

This process is in general quite intransparent and appears to be often more an outcome of "political" deals than an explicit process to solicit the best minds and those best qualified for the difficult task of co-chairing an IPCC WG.

2c. Selection of lead authors

Generally, LAs are nominated by governments and international organizations. However, how the selection is made from those lists is by far not clear. I am not aware that any process is in place. The predominant concern appears to be geographic, gender ... balance rather than making sure that the best LAs are chosen - this is particularly critical for the function of CLAs

2d. Writing of working group reports

This process functions fairly well and is one of least need for reforms. However, significantly more integration across WGs is of exceptional importance.

2e. Review processes

The review process works fairly. It is one of the most extensive I am familiar with. The main improvement would be inclusion of anonymous expert review to be added to review comments provided by experts and governments (that are explicitly attributed and not anonymous).

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Preparation of the Synthesis report needs major reform. It is the least satisfactory of all IPCC activities, yet the most important part of the assessment reports. Work across WGs needs to be integrated in the Synthesis report. IPCC should consider the establishment of a different set of LAs on the writing team than those working on the three WG reports.

2g. Adoption of report by the IPCC plenary

My response here is the same as given above under the question 2. and the Review-process question.

2h. Preparation of any special reports

I see little need for preparation of special reports (even though or perhaps because I chaired a Special Report). It would be preferable in my view to integrate the assessment report across the WGs and thereby eliminate the need for special reports in-between the full assessment reports.

3. What is your opinion on the way in which the full range of scientific views is handled?

IPCC should return to the Bert Bolin position that the full range of views and full scientific uncertainty needs to be reflected regarding all issues and questions addressed by the assessments. The more recent practice of applying some kind of likelihood and certainty measures (valuations) to most of the findings and statements is in my view both misleading and not all that useful given that different WGs apply different definitions and ways of dealing with likelihood. Making sure that the uncertainty ranges are fully reflected and explained is essential in my view. Furthermore, the more extreme parts of the distributions (say the 2% likelihood of the tails) might be more important than the mean or median. Outmost effort must be made that the rare, but high consequence events are duly treated in IPCC assessments.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

There are two sides to this story: First, the intergovernmental aspect of IPCC makes the assessment reports so very relevant - namely that they have been signed off by most of the world's governments. However, this indirectly lowers the average quality of LAs by placing high priority on balance rather than on getting the best authors to work on the assessment. Second, the line-by-line negotiation of the SPMs and the Synthesis Report brings in political considerations that are often not presented in the underlying science. Thus, the politics curtails the science. This has to be minimized.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

My view has been for a long time that IPCC assessments should be limited to peer-review literature. I am not against using other kinds of literatures as long as this is clearly indicated both in the reference in the text and in the list of references, say different font or italics for non-peer-reviewed literature.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I have responded to this question under number 3. above.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

IPCC is an assessment and not a UN Agency or a permanent project. Scientists contribute their time for free, otherwise it would be unaffordable. The clear consequence in my mind is that individual LAs and CLAs should respond to possible errors and omissions discovered after publication. IPCC itself should not respond and this has been in my view a big mistake in the past. The mistakes and controversies should be dealt in the subsequent assessment.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

This is not always done well. Furthermore, the award of the Peace Nobel prize to IPCC has catapulted the organization to very high visibility for a scientific assessment. In my view, this did not help with keeping the feet on the ground and making sure that most statements made by IPCC officers and leadership are limited to the underlying assessments rather than based on other evidence or even worse on personal opinions.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I have made a suggestion above to separate the political negotiations from the substantive assessment and to improve the process of selecting co-chairs and authors more based on merit and less on politics.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The TSUs need to be integrated with the secretariat. The current arrangement of three completely separate TSUs and administrative secretariat in Geneva needs more streamlining and integration. There should be more funding for supporting substantive parts of the assessment. The travel is provided by some but not by other governments. The IPCC travel fund should cover all LAs rather than only those from developing countries leaving other LAs from rich countries to their own devices if their government does not cover the travel costs.

11. Any other comments

The assessments need to be less frequent and WGs fully integrated.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

LA, CLA. I will respond to the following questions from the WGII viewpoint.

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

I have little experience on this process. Establishing a set of clear policy questions is important for LAs to perform focused assessment.

2b. Election of Bureau, including Working Group chairs

I had no experience on this process.

2c. Selection of lead authors

This is a critical process to ensure the quality of assessment reports. In addition to the nomination from governments, it seems adequate to ask national academies for their nominations, though this would make the LA candidates list even larger. It may be a good idea for external experts selected by ICSU or IAC to assist or check the selection process. Such openness of the procedures can contribute to increase reliability of the IPCC.

2d. Writing of working group reports

In my experience, a small number of LAs in a chapter writing team was effective to keep close discussions and communication. It was helpful to revising the drafts to meet the whole writing team when LA meetings were held once or twice a year.

On the other hand, chapter writing teams often lack capacity to cover the full range of the subjects to be addressed. Particularly, the nature of regional chapters' work looked a small IPCC, i.e., they were expected to cover the whole sectoral issues in the target region. Therefore, communications between sectoral and regional chapters should be strengthened.

It is also important to encourage inviting contributing authors for specific subjects.

All LAs were busy and volunteers, so they were often difficult to concentrate to reviewing and writing. As the work took over three years, we revised the chapter drafts many times. These long and repeated works made it confusing to make all the changes, inserts of new references and other editions. Chapter team should check the draft very carefully whenever they finalize the first, second, and higher order drafts. The role of RE should be expand to check all these processes independently.

2e. Review processes

The number of review comments we received was unusually large for the draft of each step. But I thought that this was a good sign to show high interests of the governments and experts. It also

helped us to increase the quality and reliability of the draft.

Therefore, I feel it strange that the Himalayan glacier issue passed through this review and revision process. To avoid such events, the role of RE should be strengthened, so that RE can order LAs to make relevant corrections. RE also check the consistency between chapter text and summary for policy makers and technical summary.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

The Synthesis report is useful to present the essence of the IPCC review. But I did not participate in this process.

2g. Adoption of report by the IPCC plenary

Given the inter-governmental nature of IPCC, adoption of report is very important, which sets a foundation for governments to use the IPCC reports as a basis for their climate policy. On the other hand, the IPCC plenary for adoption was a place where governments showed their views including political ones to the final drafts. When I attended the plenary, I felt that the compromise between scientific conclusions and the governments' views were sometimes very difficult.

However, this is a unique opportunity both for governments and LAs representing the research community. LAs are asked to present "policy- relevant and not policy-prescriptive" review results, and governments have the responsibility to develop their own policies based on the scientific conclusions. Ideally speaking, this process is a collaboration of science and policy-making to develop science-based policy. I believe that this framework is unprecedented and very important to the world. Therefore, both governments and the research community keep these positions firmly.

2h. Preparation of any special reports

Preparation of special reports also needs a long time and large efforts. I think that IPCC should limit the number of special reports and concentrate to the main assessment reports, unless urgent request is made from the IPCC plenary (majority of the governments) or UN.

3. What is your opinion on the way in which the full range of scientific views is handled?

IPCC is very important institution for the societies in the world as mentioned in 2. 7). Structure of three working group is adequate, but more communications among them are needed.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The intergovernmental nature of IPCC is unique and precious as already mentioned in 2.7). The overall commitments of the governments seem to be relevant, but they should understand the different roles of the government and research community in the IPCC more clearly. If the

scientific neutrality is not maintained, the IPCC would lose its value and reliability.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

For the impacts assessment of developing countries, there were only a limited number of peer-reviewed papers. On the other hand, reflecting the strong concerns and assistance needs, many international organizations, development banks, and NGOs published a substantial amount of reports, some of which were peer-reviewed and of high quality, and others were not. Therefore, if we cannot use these literatures, the assessment would be quite limited for the impacts, vulnerability, and countermeasures particularly for the developing world. I think it relevant to use these literatures after critical review as determined in the IPCC procedure.

There is another group of literature, which is the national communications prepared by the governments under the UNFCCC. I think that the national communications should be cut out from the information sources, because they directly reflect the interests of individual countries.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Indicating uncertainty is helpful and necessary, because the IPCC reports are used by policy-makers. The difficulty we faced was that no literature included such indices for uncertainty. Therefore, the uncertainty indices in the IPCC reports were determined based on the expert judgment. To avoid subjective misjudgment as much as possible, we should ask reviewers' comments on this point as well.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

IPCC's rule for handling literatures has already been set, and it is mostly relevant. However, no report of 3000 pages cannot be free from errors such as typos and incorrect referencing. Therefore it is important to introduce a procedure to correct errors and post errata at the IPCC web site after publishing the reports. If a scientific question of importance is raised, an ad-hoc committee may be established to examine it and review related materials.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I have been feeling that media did not understand the nature of IPCC and its reports very well. For example, many media treat IPCC as a specific group of experts who want to promote policies against global warming. They also report as if IPCC recommends a certain target of the stabilization level such as 2 degree Celsius and certain policies. If people believe that IPCC is not scientifically neutral, they think that IPCC wants to lead them toward a specific direction. IPCC itself did not explain its nature to the general public of the world in a effective way. Such press story and misunderstanding are one of backgrounds of the current situation.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

As I mentioned above, I believe that IPCC is a very important institution and it should be stay in the future as well. But we need improvement of its activities in the way of increasing openness, transparency and publicity.

Experts representing ICSU and IAC should be invited to check the nomination of LAs and REs

Rules should be established to increase credibility such as conflict of interests policy

Procedures to correct errors such as errata and ad-hoc committee Another point I am wondering is that, as LAs need to spend much time for over three years to complete an assessment report, it is difficult to rely only on their voluntary efforts. IPCC may need to introduce some mechanism to support their work such as introduction of literatures, their collection, English editing for non English-native LAs etc.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

I wrote a lot already.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead Author, Member of the Core Writing Team of a Synthesis Report, IPCC Bureau Member.
Also Lead Author of special reports

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

The open and transparent process whereby the various IPCC reports are produced along with the (systematic) consideration of a wide range of views, interdisciplinary expertise and geographical representation constitute key strengths in the IPCC assessment process. However, there is a need to ensure that current procedures are fully understood and duly applied by the key stakeholders.

2a. Scoping and identification of policy questions

All members and observer organizations are invited to make submissions of policy-relevant scientific and technical topics to be considered. This is clearly a valuable asset to be preserved.

2b. Election of Bureau, including Working Group chairs

The rules of procedures for the election of the IPCC bureau, including working group chairs, and any task force bureau are unambiguous. But selection of a co-chair from a developed country goes with it an obligation that that country should provide financial resources necessary to run the Technical Support Unit. There is nothing in the rules that says it but it is accepted as a rule. This precludes many countries from even seeking to be co-chairs. Furthermore it creates an imbalance between a co-chair from developing country (without similar support) and industrialised country. In addition while WMO regions are applied for the IPCC, the balanced geographic representation consideration seems to be heeded in the number of Developed Countries, Countries with Economy in Transition, and Developing Countries. The latest elections of the bureau members eventually saw 3 co-chairs for working group III.

2c. Selection of lead authors

In principle, the selection of lead authors as such does not constitute a major problem. However, there is a need to ramp up efforts aimed at increasing nominations from Developing Countries, particularly low and mid-income countries. Experience so far shows that nominations from focal points in those countries have left out many competent experts in science, technology and socio-economics..

2d. Writing of working group reports

The full application of the procedures is very important to the effective writing of the working group reports. It is essential that each member of the writing teams be fully aware of these procedures. One way of ensuring that this is done is by training the writing teams on all the procedures before they commence their work.

2e. Review processes

The multi- layer review process should certainly be maintained and strengthened. From recent experience there is a need to have key targeted reviewers for the various reports or chapters. There is also a valid case for emphasising the role and responsibilities of review editors.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Based on the experience and lessons learned from the AR4, the undergoing initiative for the preparation of the Synthesis report, including the Summary for Policy Makers, is a crucial activity that should be followed.

2g. Adoption of report by the IPCC plenary

Authors involved in the preparation of any IPCC report should not be part of any country delegation involved in the approval of that report.

2h. Preparation of any special reports

The preparation of special reports should follow the same procedure that applies to assessment

reports.

3. What is your opinion on the way in which the full range of scientific views is handled?

The process has so far been underpinned by an inclusive approach based on the assessment of existing literature (peer reviewed and non-peer reviewed according to specific criteria) and, where possible, consensus. If consensus is not possible, differing views are reported. In principle, this approach is adequate provided the procedures are duly applied.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The nature of climate change issues and responses requires the full involvement of governments. However, they should not, under any circumstances, influence the output and the results of the IPCC reports. Governments' role in the entire process-- as captured in the Principles governing the IPCC work and its appendix A-- should be given the importance that it deserves. It is worth noting that the IPCC funding structure determines, to a certain degree, the weight of some governments in the process. .

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Rigorous selection based on proven scientific, technological or socio-economic expertise of Convening Lead Authors, Lead Authors, Review Editors as well as reviewers is key to improving the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature. The relative importance of peer-reviewed versus non-peer-reviewed literature may vary according to the specific requirements of each of the 3 working groups' reports. To a large extent, working group I assessments should be based on peer-reviewed literature as its focus is primarily on the science of climate change; working group II' with careful scrutiny of non peer review literature assessed and for working group III' with less limitation but rigorous review. In any case the principles of comprehensiveness, objectivity, openness and transparency should be scrupulously observed in any assessment.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Characterization and handling of uncertainty in each of the working group reports and the synthesis report should be based on findings in the assessed literature. However, the writing teams should receive guidance based on previous experiences and lessons learned. Consistency, notably using the same terminology among the 3 working groups, is also key.. Any characterisation should be consistent with assessed literature findings.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Data quality assurance and quality control are essentially a matter for author teams and review editors. Better consideration and scrutiny of data should be emphasised at the start of any assessment process. Typos and minor errata can undergo the same treatment as for any scientific publication. Concerning errors discovered after publication, there is a need to develop procedures for handling such situations. This issue should be discussed during the next Panel meeting for guidance based on suggestions from the bureau.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

To some extent, IPCC communication with the media had not been properly handled but there has been a move in the right direction with the recent appointment of a senior communication and media relations programme manager. In addition, the initiation of media training for the IPCC bureau members should enhance the IPCC engagement with the media and the general public. It is also important to have outreach programmes and dissemination schemes for each of the IPCC products.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The IPCC assessment model is unique and should be maintained. However, there is clearly room for improvement in terms of working groups' structuring and reports' typology, content, and timing.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The IPCC management, secretariat, and funding structure were initially created as a kind of interim configuration with very light supporting systems and different levels of dependence from UNEP and WMO. I think that this arrangement could be reviewed in light of the ongoing evolution of the climate change scientific and political context. The organization should adapt to the new and evolving reality. In any case, flexibility of the secretariat is an asset that should be preserved.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

IPCC Bureau member

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

No comment

2b. Election of Bureau, including Working Group chairs

No comment

2c. Selection of lead authors

Response: I think this is fair and objective but can be improved. There is a potential problem as this depends a lot on the nomination by focal points. I notice focal points from developing countries did not play their role actively in nominating the right scientists. For this AR5, a large country for the Southeast Asia region did not nominate their scientists to the IPCC. I found that within the working group (WG1) the selection is objective i.e. based on the publication track records as well as considering other factors such as gender and regional balance.

2d. Writing of working group reports

No comment

2e. Review processes

No comment

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

No comment

2g. Adoption of report by the IPCC plenary

No comment

2h. Preparation of any special reports

I think the current procedure is fair and objective.

3. What is your opinion on the way in which the full range of scientific views is handled?

I think it is fair and objective as all views are taken into consideration by the author teams.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Gov should play more active role from the beginning stage of scoping meeting, nominations of authors, reviewing etc. As I mentioned above there are governments of developing countries did not play their roles actively.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

I think we should be very careful with the non-peer-reviewed literature.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I think this is fair. I think IPCC is organizing an expert workshop on this for the AR5.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I think IPCC should have a mechanism to revise the report in the case an error is reported.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

No comment

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The roles of governments and their focal points, especially of developing countries, should be strengthened.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

no comment

11. Any other comments

None

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Review Editor, Contributing Author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Although policy prescription is studiously avoided by the IPCC for good reasons, a sensitivity to policy implications is increasingly necessary. For this reason a more exhaustive scoping and analysis of policy questions is desirable. Greater involvement by social scientists is necessary to achieve this.

2b. Election of Bureau, including Working Group chairs

This would benefit from greater transparency. However, it is delicate matter since the process must not become politicised. Generally the Chairs to this point have been of the highest calibre. It is important though that Chairs have no political pressures from their home countries to contend with and this makes the process of widening participation away from European/North American countries more difficult than appears at first sight.

2c. Selection of lead authors

CLAs are generally the leaders in their field and their selection is almost automatic in some cases. LAs are sometimes less objectively selected, or so it would appear, and this aspect could also be rendered more transparent.

2d. Writing of working group reports

By its nature this is accomplished by synthesis of several contributions. It works well with a strong CLA and tightly structured delegation of responsibilities.

2e. Review processes

Tabulation of responses at each review stage requires attention in AR5 to avoid the recent problems in AR4. In particular the responses to reviewers has traditionally been left to the end of an editing/composing meeting. This requires a lot more time to be allocated. Each chapter does require 2 Review Editors: one to check the authenticity of citations and the other to enforce serious responses to reviewers when required.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

This, although coming at the end of the process is satisfactory since a line of sight exists back to the WG Chapters.

2g. Adoption of report by the IPCC plenary

Considerable variability in the manner these were adopted existed. A strong Chair is essential. In particular no scientists should be paraded on stage to defend the science before politicians. This was particularly unsatisfactory for some Lead Authors in AR4 who clearly were unwilling to make robust defences of their work in opposition to the views of their own national political delegations. The 'line of sight' arguments often advanced by the national delegations should be

well identified in advance by CLAs and dilution of language not countenanced where the science supports a robust conclusion.

2h. Preparation of any special reports

These are carried out satisfactorily and should be exclusively focussed on the intervals between Assessment Reports.

3. What is your opinion on the way in which the full range of scientific views is handled?

This is in my view handled very well. Views not supported in peer reviewed literature have no place in the Assessment Reports. Confidence statements regarding uncertainty are adequate means of indicating where a range of scientific views may exist. But such statements should be factual and not based on beliefs or unsupported material.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Government buy-in is the main *raison d'être* of the IPCC. Once signed off on, Assessment Reports should be supported by governments. Instances of where this is not occurring should be recorded and brought to the notice of relevant Ministries. The role of government in the Review process is very useful for the credibility of the process and may require longer time. The scientific background of government based reviewers required to be established in their review process to avoid uninformed comment.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

A later 'closing date' for literature is required and this should enable working drafts to update material to some extent between zero order and final. More use should be made of national and governmental publications, but otherwise the current approach is about right.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

This is a very difficult concept to get right. The current approach which combines quantitative and qualitative approaches is effective. Dealing with an 'uncertainty cascade' however renders this approach somewhat subjective in the end. But I don't see any alternatives which are better.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

A final 'quality control' should take place prior to publication by a senior scientist(s) outwith the IPCC process with a specific mandate to look for errors and quality assurance issues. Errors discovered after publication should be handled only by written statements from the Bureau.

Entering into debate heightens public and press anxieties over what ultimately may not turn out to be crucial matters affecting the integrity of the process.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Communicating science to the media and general public is a skill not often in abundance among scientists. Each TSU should perhaps have a media trained person and each CLA should have a media training course as part of their formation. But at a larger scale national entities ‘selling’ the Assessment Reports are essential. These might be routed through National Academies perhaps to give them a role in the process. But National Academies should not have any jurisdictional authority on the IPCC process.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The model needs a revamp, though the concept is too valuable to interfere with too much. The Assessment Reports should be issues in sequence with perhaps a 6 month period between them. This would defuse some of the problems associated with judgements that are forced to be too hasty. In the longer term I would like to see some responsibility thrown onto the governments to rationalise their responses to previous Assessment Reports. I would like to see a Volume 4: Responses of individual governments. It could be a short publication, but could galvanise policy responses and at least put on the record where inaction is occurring.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The secretariat is not highly visible and often has very poor downward connections to national bodies. An intermediate national delegate body which does not meet physically, would be desirable for keeping IPCC issues alive at national level.

A funding structure similar to what occurs for IGBP would be highly desirable. This is based on per capita gnp and would enable more capacity for TSUs.

11. Any other comments

It is a bit disappointing to see that AR5 will be very much more of the same in terms of structure and approach. While the model is good, it is time for some renovations to ensure its continued success.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead author, coordinating lead author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

very robust since it involves governments

2b. Election of Bureau, including Working Group chairs

I am not familiar with this

2c. Selection of lead authors

nomination process is very wide; actual selection not clear to me

2d. Writing of working group reports

one of the key strengths of the IPCC process; developed country scientists typically shoulder most of the work though since they have more access to literature; top quality science writing

2e. Review processes

very stringent and top notch

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

very rigorous

2g. Adoption of report by the IPCC plenary

takes a lot of time but assures ownership by governments

2h. Preparation of any special reports

shares the above strengths and weaknesses

3. What is your opinion on the way in which the full range of scientific views is handled?

Reports include all published literature so if its out there, all views are considered.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

There is minimal interference at the writing stage. But governments approved the SPM which can be watered down because of certain biases. Still government approval assures ownership of

the outputs.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

I think it should be confined to peer-reviewed papers. Non-peer reviewed can be used but very selectively. They must at least be published by reputable sources. Of course some subjectivity will be involved in this. But allowing non-peer reviewed papers wholesale will water down the process.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

If there are errors after publication, an errata supplement could be considered. In any case, they can be corrected in subsequent assessment reports.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I think its OK.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The process is working well right now.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Support for non-Annex 1 authors to access peer-reviewed literature (eg journals) while in the process of writing.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Government Focal Point

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

strengths – the involvement of governments, weaknesses – difficulties to meet all countries different needs and views of what is needed

2b. Election of Bureau, including Working Group chairs

could be wise that all nominees are in plenary for presentation of themselves to the panel at the election. It should not be allowed to nominate at the meeting.

2c. Selection of lead authors

strengths – the open process for nomination of authors. Weaknesses – the closed process which only Bureau members participate in when making the final decision. Countries that serve at the Bureau tend to have more experts in the reports.

2d. Writing of working group reports

OK

2e. Review processes

very robust as long as everyone follow the guidelines

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

OK

2g. Adoption of report by the IPCC plenary

the time in Plenary should be better divided to give enough time to each part of the report, not hazardizing the latest parts due to time constraints.

2h. Preparation of any special reports

OK

3. What is your opinion on the way in which the full range of scientific views is handled?

from my layman position I think it is well handled

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The involvement of governments is one of the main issues for the whole IPCC idea and should stay so when identifying governments needs, but at the same time governments should also be

more susceptible for the scientists knowledge in the final writing of the reports. It might be discussed whether we in Plenary only discuss the message put forward by the scientists and leave it to them to put the final wording, instead of going through line by line. Many countries and organizations “translate” SPM either word by word or more often simplify the message for their own audience. Then it is important to have the right knowledge rather than the English wording.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

A broader input from all countries in a region would be welcome. Also from developed regions, the used literature is a mirror of the country from where the author comes. Non-peer-reviewed literature should be clearly noticed. It has to be critically assessed and cross-checked with other WG-groups and it should be made clear that the study is a non-peer (I guess that is the way it is already and that was the reason why it was possible for finding what the mistakes were, but it might be important to stress this once again so that everybody is aware of how it works). Non-peer literature should not be part of analyses for likelihood and not be included in SPM or SYR. Further, non-peer might be divided into different categories and i.e. national technical papers evaluated by governments or technicians, papers on best practices that has been evaluated etc., are more trustworthy while a case study should be very clearly shown just to be - a case study.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The characterization of uncertainty might be perceived as difficult to understand.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I have no clear insight in the way it works, but I guess TGICA is the place for handle data quality together with the TSUs. Data that is not quality checked should be identified specifically. Errors found after publication should be recognized and made visible on both the TSU home page, affiliated to the report on the web and also notified on the main IPCC web.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I guess the question relates to the “gates” and in that perspective I think that the communication of the “supposed errors” should have been met more professional by the IPCC. To meet the press with anger or bantering is not the correct way. On the other side, to apologize for mistakes before knowing if there were real mistakes, is not right either.

If you mean the communication as such, I believe IPCC could make an “education set” to put on the web, containing a power point followed by a written text. That would have less pressure on the WG chairs and vice chairs to go around the globe to make presentations.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

No, not really. I think the process is robust, we have countries both being very negative and not taking the climate change as a real problem and on the other side there are countries that really want to make changes to meet the threat of climate change. It should be clearly stated that an IPCC assessment covers only scientific literature up to a certain year, a “time document”. It would not be wise to include new “short tracks” in the thorough IPCC process. Then it would be really difficult to avoid errors. It is better that other organizations take care of such updates, which will give further input to coming IPCC assessments to analyze.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None (user in policy discussions)

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The limited number of errors identified this year underscores that the existing process is mostly successful in catching errors. On the other hand, the few mistakes that slipped through demonstrate the need for better enforcement of existing IPCC standards to prevent mistakes, as well as a formal, standardized process for identifying, verifying, and correcting mistakes when they end up in the final report. This could be done by a standing committee and corrections could be made publically available on the IPCC’s website. While the many stages of review of IPCC documents has and will continue to catch most mistakes, given the broad scope of these documents some are inevitable and should be handled in a disciplined routine manner.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Communicating scientific information about climate change to the public is critical and substantial changes seem warranted in how the IPCC performs in this role:

- The chair of the IPCC and its lead authors can and should play an active role in communicating the IPCC’s scientific conclusions, but must do so within certain prescribed limits. It is critical that the authors provide a clear and concise message of what we know, the basis for this understanding, and what uncertainties remain. This message must be policy relevant, but must carefully avoid supporting any particular policies, such as supporting particular climate stabilization targets or other prescriptive statements.
- The past practice of relying on thousand-page assessment documents as the principle vehicle for communicating this information should be viewed as necessary, but not sufficient.

Supplementary materials, including information available via the web, that explain key conclusions in language easily assessable to the public are critical.

- The IPCC should develop a professional communications component to its program complete with staff, training and other resources. Its inability to respond effectively to the controversies that arose in early 2010 was due in part to a lack of professional capacity to deal with the media and general public. This function should be expanded and institutionalized within the IPCC secretariat.
 - The IPCC should consider adding a governmental co-chair. The science co-chair would oversee the scientific assessment process and communication of scientific conclusions, and the governmental co-chair would oversee non-scientific communications and contribute to insuring that the reports are policy relevant. Care should be taken that this position does not become nor is perceived to be a filter of the IPCC's scientific messages.
-

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Reviewer, Contributing Author, member of drafting team for SPM, Lead Author (chapters, Technical Summary), Coordinating Lead Author. Also Coordinating Lead Author of a special report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

I see no problem on this score.

2b. Election of Bureau, including Working Group chairs

The governments ought to find a way to make these decisions more transparent, but I do not believe this area presents a big problem at the current time.

2c. Selection of lead authors

The TSUs and the bureau need to be much more transparent about author selection. While the issues are delicate, and individual cases should not become public, the specific criteria used should be stated publicly, and the nature of the process described. After being an LA or CLA several times, I still have no idea how I was selected. This is unacceptable.

2d. Writing of working group reports

There are two important defects here:

- 1) The three WGs need to interact more in order to produce an integrated assessment of key

issues. The WGs still largely act separately, and there is no hint that the situation is about to improve for AR5. Writing teams composed of LAs from two or in some cases all three WGs should be working on text for a handful of key issues (like sea level rise and water resources) from the outset of an assessment.

2) The writing process is closed when it should be more open. While it is difficult to imagine participation by the general public as observers, there is no reason that the WGs should not let representatives of the media sit in on at least some parts of author meetings. Most panel meetings at the National Academy of Sciences are open much of the time to the general public. Why should IPCC WG author meetings be closed *even to members of the other WGs?! Executive sessions could be used where necessary, as is the case for the Academy.*

2e. Review processes

The key here is to strengthen the role of review editors. They need to be invested with the power to veto CLA decisions (subject to some specific appeals process), and to be told that they are expected to use it. This may be more a matter of choosing review editors judiciously, and instructing them accordingly, rather than changing any rules.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

The Synthesis should be an integrated part of the WG writing processes. If my advice in part d) above were followed, this would be easier to achieve. Leaving the synthesis for late in the process is not wise. Of course, if WG integration were done effectively, a Synthesis report might not be necessary.

2g. Adoption of report by the IPCC plenary

I have no comment on this.

2h. Preparation of any special reports

See my answer to #9.

3. What is your opinion on the way in which the full range of scientific views is handled?

On one level, IPCC is very effective at inviting participation from the full range of experts who qualify (i.e., those who publish in the peer-reviewed literature). I do not detect any test applied, such as whether authors hold views consistent with previous IPCC conclusions or any other such litmus test. The main limitation of author selection seems to come from the limited expertise available in certain subject areas. In order to satisfy the needs of governments, certain numbers need to be produced (i.e., temperature or sea level projections from GCMs). This automatically means that many participants will come from government laboratories with modeling expertise (for WGI). Time constraints on authors mitigate in the same direction. As a result, there is probably too much influence from some sectors of our community, and in some cases, from the same individuals over a long period of time. More effort should go toward diversifying the

expertise and institutional origin of authorship.

On the other hand, while the WG's attempt to incorporate a wide range of scientific views, they lack a systematic, consistent, and coherent approach for doing so (see also my response to question #6). Ideally, all working groups would adopt a risk management approach and use consistent, probabilistic descriptions of risks associated with particular outcomes. If they did so, then outcomes which are believed to be unlikely but having high impact, or those for which knowledge of likelihood or impact is just emerging, would be accorded some weight. At the current time treatment of such outcomes, which have high policy relevance, is not consistent. Rather than treat outcomes for which there is no consensus as unquantifiable risks, as is often done now, an attempt ought to be made to quantify the range of belief and report it probabilistically. Working groups currently have the language for doing so (via the Uncertainty Guidance), but too often lack the desire to use it. The manner in which sea level rise for the 21st century was handled by WGI during AR4 provides an example of the deficiency of the current system. Consequently, the results were much less useful to policy makers than they might have been. Implementation of such a system would require much closer collaboration *during the writing process* among authors from the different WGs.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I believe that the original decision to structure IPCC as intergovernmental was a wise one. I also believe that involving governments in approval of the SPMs has had far larger benefits than costs. Occasionally, governmental representatives to the IPCC Bureau appear to have exercised inappropriate influence over lead author selection. Sometimes, government delegates appear to let their political objectives influence their decisions on SPM language. As a result, some scientific points have, in the past, been changed for non-scientific (or even editorial) reasons. I do not envision any easy remedy for such transgressions.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

IPCC should make use of as wide a range of literature as is available. As long as the source of information and its scholarly status (i.e., reviewed, un-reviewed, in process of being reviewed, and so forth) is fully identified and as long as the material is made available to any user, then there is no reason to exclude any class. The solution to the problem of variable review level is that IPCC authors should feel obliged to scrutinize items all the more closely if they have not been peer reviewed previously, and to indicate *within the chapter text* if key conclusions are constructed partially from such literature. Sorting on the basis of credibility is already done to some degree and described by authors within the chapters even for peer reviewed studies, on the basis of a variety of characteristics, so this does not greatly expand the sort of judgments that need to be made.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

See my response to #3. This area is a major weakness of IPCC's current approach and needs to be fixed. At the current time, WGI in particular (but not only WGI) too often produces flattened views of the world, where unreasonably high precision and confidence is accorded outcomes from numerical models which have known limitations, while use of information from other sources is not accorded equivalent status (where merited), and questions related to structural uncertainties in models are almost entirely ignored. At the same time, in areas (e.g., ice sheets) where model deficiencies are well known, outcomes are reported as "no consensus", as if not reaching a consensus on beliefs means nothing can be said about outcomes. Such an approach flies in the face of what ought to be a move toward quantitative or at least qualitative probabilistic representations of outcomes.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

IPCC lacks a system for rectifying errors after publication, and it needs one immediately. I propose that a webpage be established that invites public posting by those finding errors (as opposed to differences in judgment). The secretariat would be tasked with staffing the webpage sufficiently so that claims of errors could be researched and responded to within days. At the outset, there might be a deluge of claims, but once it became clear that IPCC was taking this effort seriously, the claims would probably abate.

Discovery of some, but not all, errors will necessitate explanation of how they occurred. Procedures should be implemented uniformly across the WGs, for investigating and explaining errors. But too much time can be absorbed chasing reasons for mistakes which have are not critical or are of little interest to the public. Some errors will happen and it's not clear that each and every one needs to be investigated. But from many mistakes, there are things to learn about how to do the job better in the future. A procedure is needed for judging which errors to pursue to the source, and which are not worth pursuing.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I find IPCC's approach to public messaging to be unprofessional and antiquated. The Bureau needs a full time senior professional, and probably several junior staff. Furthermore, it needs a reserve fund to purchase outside advice from communications specialists at key moments, including when assessments and other reports are released.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I believe the governance model is sound but the assessment model sorely needs to be updated. Full assessments are not needed every six years. Most of the answers are only marginally different from what they were before. Instead, major assessments should occur every decade or even less frequently, and the human resources freed in the process should be focused on crisp, brief special assessments of a handful of critical issues (such as ice sheet dynamics and sea level,

carbon cycles feedbacks, and various specific human responses) which can be produced within about a year, particularly on issues which are newly emergent, or where great uncertainties remain.

The current model is just too cumbersome for our high-speed world. It also amounts to a tax on research time for many. We need to address key issues more nimbly, and spend less time on issues where incremental change is all that is in order.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

As IPCC matures, so should its management structure. I believe the Chairman of the Bureau should serve as a full time, paid employee of IPCC. I also believe IPCC needs a conflict of interest policy for the Bureau Chair and each of the WG chairs. This is not meant to cast any aspersions on the current Chairs, but merely to recognize that every mature organization has such a policy for its executives.

11. Any other comments

IPCC has done remarkable service over 22 years and four assessments. But the world has changed radically, including the world of science and information, and IPCC needs to adjust. Increased transparency of procedures, choices, and scientific judgments is a critical component of maintaining public trust. Increasing ability to rapidly respond to emerging scientific developments is a key to maintaining relevance. Increased accountability for errors is important for maintaining credibility of the product.

In summary, my key points are:

- Produce fewer comprehensive assessments, and more quick, short reports on key issues
- Integrate the work of the WGs by using multi-WG teams on certain key issues
- Fully implement a probabilistic description of uncertainty in order to incorporate the full range of beliefs in the peer reviewed literature.
- Empower the review editors
- Increase transparency by opening WG author meetings to observers from the media, at least in part, and fully explaining the author selection process
- Make the Bureau Chairman a full time paid position and develop a conflict of interest policy

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Observer of IPCC sessions and working group meetings, expert reviewer, participant in IPCC scoping meetings, Lead author, Review Editor, Contributing author (chapters, summaries). Also Lead author and contributing author of special reports

2. What are your views on the strengths and weaknesses of the following steps in the IPCC

assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Scoping of the IPCC reports has the primary result of producing a high-level outline of topics and not prescribing policy questions to be answered. In my view, the most important aspect of the outline is the breakdown into chapters, which defines the areas that each author team has license to assess. The IPCC process relies heavily on the balance and functioning of the author teams. The IPCC objective to be policy relevant but not policy prescriptive is in contrast to the idea of raising policy questions to be answered. Being policy relevant without being prescriptive is not, however, always clear and has led to the IPCC trying to decide (with great difficulty) on policy relevant questions in the TAR – in my view this process was not particularly successful and was not repeated. Furthermore, some involved in the preparation of the assessment reports have pushed to impose themes (in some cases resisted by author teams) and these efforts raise the question of who has authority to impose topics or analyses to be carried out by the author teams beyond the outline agreed upon by the IPCC itself.

2b. Election of Bureau, including Working Group chairs

The TSU and the developed country co-chairs of the working groups have historically had important influence in the IPCC reports. I expect that this level of influence on author selections and guidance given in author meetings is not transparent to the IPCC (government delegations).

2c. Selection of lead authors

Selection of lead authors in my view is the most important decision in the IPCC process, and it is not transparent. It is important that the author teams both function well as a group, and encompass the full range of credible views and expertise on topics being assessed; to accomplish this ideal selection is a challenging task. I expect that greater effort is needed to broaden the experience of the TSUs and reach out to a broader range of potential authors to improve selection of authors.

2d. Writing of working group reports

Author teams have limited time and resources to draft their chapters. It is important that teams are assigned a chapter outline that can mostly be carried out by that team itself without too much reliance on other teams via e.g. cross-cutting groups. It is also, of course, important that the author teams are capable of assessing the full range of literature relevant to their topic and that they can work as a team. It is important that minority views are included.

2e. Review processes

The review process is only effective if good and complete reviews from the full range of credible perspectives are carried out, and the author teams fully consider these reviews. In practice, reviews by experts are voluntary and often do not have complete coverage and government reviews do not represent a full range of views. Review editors are in place in recent reports, but

are mostly of use (in practice) when there are major differences that the author team has difficulty resolving. To a large extent, reviews are additional information for the authors, however, there are not effective strict controls to ensure that review comments are handled fully – it has been mostly the responsibility of the author teams. Improvement would mean that either the author teams be more responsible, and/or that controls are imposed. I suggest that a broader set of complete reviews be encouraged, and staff support be given to the author teams and review editors to facilitate full response to (the large number of) review comments.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

The shortening of chapter results to the SPMs tends to lose information on uncertainty and what is not known (and why), in favor of what is known. The selection of what material is included tends to be what is popular among authors or what story-line is promoted by leaders in the process (e.g. co-chair, author or TSU). Each WG has a different process for drafting the SPM and technical summaries: e.g. drafted by co-chair or TSU, or prepared by a select set of authors (e.g. CLAs). The draft of the SPM often carries through to the final publication since reviews and government delegations do not often result in significant shifts in the content of the draft. The Synthesis report is further divorced from the author teams of the underlying WG chapters and in my view has rightfully (since there is not a process to assess additional literature) always been mostly cut-and-paste of the WG report results. An alternative approach is for the WG's to simply assess the synthesis research literature, and have an overall "summary" as opposed to a "synthesis" report that attempts to do synthesis research but has in the end been in practice a summary of summaries.

2g. Adoption of report by the IPCC plenary

The line-by-line review of the IPCC SPMs at the WG meetings plays an important role in giving governments ownership and understanding of the reports. While tedious, it is an important part of the IPCC process. The underlying reports are generally adopted by the IPCC without much discussion leaving it largely up to the authors and WG co-chairs/TSU to ensure their quality.

2h. Preparation of any special reports

Special Reports allow for a more in-depth assessment of specific topics and engage experts with more detailed and practical understanding. Special Reports provide a largely fresh assessment and, particularly for areas related to technology and practices (CCS, LULUC, aviation, CFC replacements), the reports are valuable.

3. What is your opinion on the way in which the full range of scientific views is handled?

The range of views included in each chapter is primarily influenced by each chapter's author team. Authors' own views, motivations and publications can be over-represented. Furthermore, authors from a common discipline or topic area tend to have a common world view that can tend to color an assessment chapter. A greater diversity of authors and a greater use of contributing authors can improve consideration of a full range of views. Further work and emphasis is needed

to describe credible differences in views which are largely absent in assessments, and the associated open questions for each chapter and WG.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The engagement of governments in the IPCC process strengthened broad government ownership of IPCC products and is important. The separation of government and expert roles has allowed – to some extent – independence of author teams for report chapters and should be maintained and strengthened.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The IPCC should seek to assess all important and credible sources of data/literature and base their assessment on primary literature to the extent possible. Doing this currently relies on the author teams, in which case it is imperative that the authors are aware and are willing to assess the full range of important credible sources. Including non-peer-reviewed literature can improve IPCC assessments, but if included then it is important that author teams are willing and able to assess this literature. There is a vast amount of non-peer reviewed information of which some is of high quality, e.g. government and industry technology assessment reports. However, basing assessments on the reports of the media and advocacy groups does not bolster confidence in an assessment.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The characterization of uncertainty must be central to the assessment process, however, its characterization in the IPCC tends to become blurred with each level in the assessment process, going from author discussion to chapters to technical summaries to SPMs to the Synthesis Report and finally to the Synthesis Report SPM. The blurs include a loss of information on the reliability of an uncertainty statement (is it statistically provable or simply opinion?) and the reasons that uncertainty exists, the reporting of incomplete estimates of uncertainty (e.g. only including well known uncertainty while not including poorly characterized uncertainty), contriving statements that are unaffected by uncertainty (e.g. conclusions contingent on scenario assumptions), or simply not mentioning uncertainty. While the use of common nomenclature (e.g. 90% confidence interval) is of course needed, it should not detract from the clear description of the reasons why we may know or not know an answer, and should not be used to pressure authors to produce uncertainty estimates with questionable reliability and mix these with uncertainty from sound estimates facilitated by terms such as “likely”. In addition, it would be helpful for every chapter to highlight in the executive summaries the reasons why more definite conclusions cannot be made for the most important topics of the chapter (while maintaining the IPCC policy of not providing research guidance).

7. What is your view of how IPCC handles data quality assurance and quality control and

identification and rectification of errors, including those discovered after publication?

I am not aware of any IPCC effort or process to identify or correct errors after publication.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

My view is that IPCC communications should not go beyond the balance of assessment given in its reports and not be blended with other messages. It is important to make IPCC's products accessible and promote accessibility.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Steps to improve the breadth and functioning of author teams and improve the review process are warranted. For author teams it would be good for the authors to encompass broader experience (beyond academic and government research) and not be tied so closely to their history of their own publications on the specific chapter topic. This could mean increasing the number of senior (with some new to the IPCC) experts with broad experience as lead authors and relying more on contributing authors as subject experts – I note here that WG2 and particularly WG3 do not engage contributing authors to the extent of WG1. To do this will involve additional communication within the lead author teams and with contributing authors. Chapter staff support for individual chapters would improve the functioning of author teams by ensuring transparency and communication to all lead authors (e.g. arranging calls, draft version control and access, etc.). Chapter staff support would best be responsible to the IPCC process and not to (i.e. independent of) individual authors or IPCC bureau members, much as the role of the Review Editors. Chapter staff support could, in the review process, work along side the Review Editors and with author teams to make sure and document that reviews are considered. In the past, it has generally been very difficult for Review Editors to track the response to review comments throughout the reports. For chapters that go thorough substantial revision after the 2nd draft, there should be some process for further review.

11. Any other comments

IPCC WG1 over its history has been obsessed with countering claims made by the so-called skeptic community. In my view, this has made a description of the limits of knowledge unclear in WG1 assessments and weakened otherwise very comprehensive and careful assessments. While the assessments are not incorrect, one needs to read the assessments carefully so as to not over-interpret findings since what we do not know is often not stated.

It has been the policy of the IPCC to assess the literature and not do research. However, on a number of occasions the IPCC has been connected to model intercomparisons/harmonization and scenario development which border on research. Such research should not be given preferential

treatment compared to other sources of research – there should be a level playing field and not favored models or groups (whether real or perceived).

IPCC WG3 reports have suffered by the limited engagement of business and industry, and the mainstream of engineering practice as authors and reviewers. This weakness is more important if WG3 would like to make its reports more practical, since the bulk of experience and expertise on practical matters resides in business and industry and engineering practice. There have been some successes in engagement by WG3 (e.g. the Aviation and CCS Special Reports), but the weakness in engagement remains and is resulting in unbalanced author teams which raises the risk of biased reports. Effort is needed to enhance input from business and industry and engineering, which might be enhanced by broadening the background of TSU staff and measuring/managing the balance of engagement.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Coordinating Lead Author, contributor, Lead Author (chapters, Summary for Policymakers), participant in a Scoping meeting. Also participant in the writing of IPCC Guidance Documents

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

This, in WG1 at least, is done decoupled between scientists and governments, the scoping meeting is largely shaped by scientists and then discussed by governments. It works ok like that, but I could imagine that a more interactive process might be good, Although maybe also complicated!

2b. Election of Bureau, including Working Group chairs

I have no direct experience of this, the chairs in WG 1 I worked under were excellent, with Susan Solomon outstanding. The present WG1 and 2 chairs are up to an excellent start as well. I think the most important characteristic of a chair is commitment to scientific excellence, and determination to make the report reflect the true state of scientific understanding with all its uncertainties and unresolved questions, and to ensure that the product is rigorous, careful and thorough, so that it withstands the test of time. This requires strong leadership, and I have been fortunate to work under very strong chairs. The process of chair election is not something I know much about.

2c. Selection of lead authors

The process, as far as I am aware of it, is largely driven by scientific excellence, .e.g based on suitable expertise, publication and impact records. There is need to involve a broad regional

representation, but this is accomplished by involving strong scientists from many regions. Sometimes, compromises are made, but only up to a certain level. I think the process works, and I think the IPCC got the balance generally right between involvement of many regions, and not compromising on the science.

2d. Writing of working group reports

This depends strongly on the writing team, its scientific rigour and commitment, and its ability to collaborate. My experience has been excellent. The timelines are tight, and it is hard work. Given the increased level of scrutiny as well as the larger and larger amount of literature it seems that the writing process could benefit from a bit more manpower. For example, help compiling references, doublechecking if cited literature says what it is cited for, might increase peace of mind for authors. I tried to do all this myself, all the time, but it was hard work and it will be even harder now.

2e. Review processes

The several review rounds encompass

- a huge, sometimes hard to manage amount of comments
- very thorough reviewing and responding.

Overall, it was my experience that the comments were thorough and improved the report a lot. The need to respond in writing makes sure that nothing falls between the cracks.

Sometimes the volume of comments was more impressive than the content, and sometimes the best and most challenging comments came from within the WG writing team (for example, authors from other chapters). In a way that shows that the expertise assembled was excellent. Still, it would be great if the scientific minds outside the IPCC process that understand climate science could be even more encouraged to comment. IPCC is asking them for comments, but maybe we need to be even more proactive to get input. Overall, the multiple rounds of review made the document much more robust than any scientific paper I wrote. I also found the process more rigorous than that of other assessment processes I have been involved with.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

We tried very hard to make the language simple, and comprehensible and still rigorous. That can be a challenge. Communicating complicated science in a comprehensible way without jargon is not easy!

2g. Adoption of report by the IPCC plenary

My experience was that this process worked better than I expected during my one experience of it during the AR4. It was in my view because the chair was managing the process very well. I found it very interesting to get the countries' perspective, see their understanding of the usefulness of the result, and think about their suggestions. However, a very important feature that enhanced my trust in the process was that in that particular plenary, authors could comment on

the scientific validity of any proposed changes, and prevent changes that were not consistent with the state of science.

2h. Preparation of any special reports

I have not been involved in one

3. What is your opinion on the way in which the full range of scientific views is handled?

The review process should ensure that scientific uncertainty or unsettled / controversial science gets highlighted where it exists. My personal view as an author, and one strongly impressed by the chair, was that where true gaps in understanding, or uncertainties exist, these need to be treated with respect and not be glossed over or ignored – today's unresolved questions can be tomorrow's exciting results and breakthroughs in understanding. We may not always have accomplished it always and everywhere in the early drafts, but we did so after the review process – that process definitely helped. However, in cases where some views clearly have stronger support by data than others, it is also important to say so. An example which I was involved in is climate sensitivity. If a method to estimate the climate sensitivity starts from assumptions that are not sound, or if important uncertainties are missing, then the result will be less credible than results where assumptions are sound. Sometimes, for example, a method can be tested with a climate model, where the sensitivity is known. If a method used in the literature does not get it right under these conditions, then the method is not credible. The review process, particularly also within the research community, is very rigorous and colleagues picked up on any unsettled issues.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

My experience was that the governments have important input into the topics covered, but not into the scientific findings, which are left to the scientists. I think the process works.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

For areas with well established, rigorous scientific process, such as global climate science, peer review is still the gold standard. Of course, it is not totally fail proof, but scientific literature is usually self correcting. So I recommend to keep peer reviewed as the most desirable target. However, it can be useful to use updates on reviewed publications, (such as running more model data through the same, well described and published method), which I think is no problem as long as the method and the data are each published. When it comes to really 'grey' literature, then a rigorous process of evaluating it would be useful, including one where it is assessed if the same question is addressed in the peer reviewed literature, how sound is the method, how well is it described, is it based on similar, peer reviewed cases, etc. I think there is some guidance on that underway in IPCC for the future.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

WG1 had a very transparent way of addressing uncertainties: usually, results were based on statistical assessment. For example, for attribution, studies are available that quite completely address model uncertainty in fingerprints, observational uncertainties etc. Then, these published statistical uncertainties give useful guidance as to the overall uncertainty that a finding should be described by – the finding will be more uncertain than the statistical nominal uncertainty, since not all uncertainties can be assessed quantitatively within a result (an example in attribution is, for example, the question how well random climate variability is characterized, data outside attribution results exist that are encouraging, but there are remaining uncertainties). It is more difficult when questions are addressed for which uncertainty is harder to estimate, such as the probability of rapid changes – models and proxy data can only give guidance, but there is a lot of expert assessment involved in assessing their reliability. This would be one area where we could still improve – better separating or characterizing findings with different levels of inherent uncertainty beyond quantifying the uncertainty. Also, I believe that we could improve the way uncertainty treatment was communicated (the public perception seems to be that we did much less than we actually did!)

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I haven't been involved in how this is done, my observation (and that's not a very rigorous one!) is that the reaction could come even faster. I found the corrigenda on the ipcc webpage helpful.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

This appears difficult, and I do not blame IPCC for it. It seems difficult to communicate climate science to the media and the public. My suspicion is that the time and spatial scales at which we have best understanding of climate change (large scale, long time) are those that make least sense to the general public, who experiences climate as local weather and hence has limited understanding of the type of relative slow changes we describe. I have no good idea how to address it, but I would not blame the difficulty on IPCC. We also have not communicated well how assessments are done, how rigorous and scientific the process is, how far removed from advocacy it is (there is no role for advocacy in ipcc reports!) and what merit criticisms have. A particularly frustrating example is that it seems not to have been appreciated by the public that the finding that human activity was very likely responsible for most of the warming in the 2nd half of the 20th century is based on a big pool of very rigorous scientific literature.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

No, I think this is a good process. It draws heavily on the scientific community though, which could use longer time between assessments and more support, and more time to do the research that is assessed.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Given the funding IPCC receives, its products are amazing. I worry that in the present climate, and with the amount of scrutiny the reports get (rightfully so if major political changes are based on its findings), it should be considered very carefully how to improve funding to make the IPCC able to withstand scrutiny better by better funding particularly technical support, and maybe more aspects of quality control (eg research level staff to doublecheck citations and check if they say what they are quoted for, maybe even reproduce key results, etc).

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Coordinating Lead Author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

I am happy with the current procedure, which includes extensive consultations with scientific and governmental players.

2b. Election of Bureau, including Working Group chairs

Fine as is.

2c. Selection of lead authors

There is some governmental pressure to have an equilibrated distribution of genders and nationalities, which is not always fruitful.

2d. Writing of working group reports

To a large extent it depends on lead authors. See comment above.

2e. Review processes

Would recommend to include as well some/more representative ngos and selected expert groups/experts which are not normally reviewers in the IPCC current system.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Fine as is.

2g. Adoption of report by the IPCC plenary

Can be very political at times, which is not always good. But finally the science is completely preserved in the original reports, which do not need to be approved by the plenary.

2h. Preparation of any special reports

Same comment valid for "Review Process".

3. What is your opinion on the way in which the full range of scientific views is handled?

I have a very positive opinion. I am very impressed by the rigorous scientific method and excellence of IPCC.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

It varies. Some governments make some very valuable scientific inputs. Others have very small/no input. While other governments make some very politically-driven inputs. All in all, given the intergovernmental nature of IPCC, I believe the governmental roles/attribution are adequate.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

My only suggestion is to try to postpone the deadline of accepted/published literature as late as possible. Particularly WGI has had a very strict deadline in this sense.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I feel IPCC has been very rigorous and has adopted very adequate regulations in this regard.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

In spite of all the efforts and the literally thousands of reviews there are still some few errors, which could be reduced by adding some more critical reviewers in the process, as indicated above. All in all I believe IPCC scores very high compared to other published material.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I feel it has been very adequate.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

No suggestions, I am happy as is.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

No suggestions, I am happy as is.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Contributing author, IPCC Bureau member

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

The major assets of IPCC are the trust and collaboration of the vast majority of the scientific community and the active participation of governments.

The procedures for the assessment cycle, both in the case of Special Reports and in the Assessment Reports, insure a balance and proper participation of both, the scientific community and governments in the definition of the outlines, where scientific and policy relevant issues are considered and identified.

Assessment outlines are first drafted in Scoping Meetings with the major participation of relevant scientists and later discussed in the Bureau and Plenary sessions where governments present their views on the relevant policy questions that they consider should be addressed.

In my opinion, this procedure is basically correct and there is little margin for improvement.

2b. Election of Bureau, including Working Group chairs

The Bureau is elected by the governments in an IPCC plenary. This election has the advantage to propend regional balance, but more important, the government compromise with IPCC assessments.

The Bureau has a decisive role in the IPCC scientific process including the selection of LAs and REs. Therefore, it would be desirable that its members had a strong scientific background. A

possible disadvantage of the present system is that sometimes scientific qualifications are not always the priority in the election of some Bureau members.

2c. Selection of lead authors

Each chapter of the assessment reports requires Lead Authors with complementary ranges of expertise and views, and in many cases with different perspectives given by the regions to which they are familiar. Hence, their selection should be conducted by a relatively small group of qualified scientists to effectively compromise and balance these criteria. To complete the knowledge of the LAs world offer they should have the wisdom to make broad consultations with other relevant scientists. These criteria are basically accomplished now in the IPCC as the selection of lead authors is made by the WG bureaus.

There are two constrains that sometimes hinder a proper regional balance. The first is the different regional and/or national development of the climate change related sciences and therefore is an aspect that cannot be solved from the IPCC. The second is that the participation of scientist from developing and economy in transition (ET) countries are limited by the Trust Fund. Scientists from developed countries are funded in their travels by their own governments, while travels of those from developing and ET countries are paid by the IPCC. The fact that IPCC has very limited funds with respect to its huge task has bounded the participation of scientist from these countries to a top of about 40 % of the total number in the Special Reports or WG assessments.

I will come back later, while answering other questions, on the need of greater funding for the IPCC.

2d. Writing of working group reports

The process of writing several drafts with iterations between authors and reviewers insure quality and transparency.

However, IPCC authors, as well as Bureau members, work on no paid basis. Although, in many cases their institutions allow their work for IPCC as a contribution to science and because of the prestige that this implies, there is at least two no desired consequences. First, the work for IPCC is an extra load of work for scientists, which are usually, already overcommitted with work because of the high demand on the climate change related research fields. Consequently, their contributions to IPCC may suffer by the lack of enough dedicated time in the context of a very demanding schedule. This is especially the case of CLAs that have the more severe work load having to ensure the coherence within their chapter and also with other chapters. I wonder if some of the few mistakes or alleged mistakes in the 4AR were consequence of CLAs not having enough time to sufficiently revise and polish their final writings.

The second problem is that authors, and more precisely CLAs, do not have any contractual responsibility, other than a moral one. In a context in which IPCC assessments are becoming increasing important for the international decision making process, this may be an increasing weakness in the IPCC practice. One may ask, for instance, what are the responsibilities of

authors, especially CLAs, beyond their own willingness, after they finish their writings when later appear some queries about their chapters.

Funding of part of the authors work should be considered in future.

2e. Review processes

The 4AR had about 90,000 review comments. It is likely that this number will increase in future assessments.

Many of the comments were not backed with appropriated literature references. Therefore, to make the review process more substantial as well to filter and reduce their number, all comments that not merely address editorial issues should be supported by literature as it is required for the Reports.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

SPMs were approved by consensus. This was a great merit of the chairmen and the bureaus of the IPCC until now. To what extent this consensus could be maintained in future is difficult to anticipate. This mechanism deserves further revision, but I am unable to propose now an alternative.

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

The full range of scientific views should be reflected in the IPCC reports. This was basically accomplished in the previous reports because of a pro active attitude of IPCC, which allowed comments on contradictory views even in cases where there was an overwhelming majority of the written science in some issues.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

This was partially addressed in 2.1 and 2.2 and 2.7. Other issue is the role of governments on the funding process, which I am going to address in point 10.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

There is a huge amount of non English literature that is important for the understanding of regional aspects of climate change. In addition, there are also an important number of reports from practioner institutions that are becoming increasingly important as initiatives on adaptation

and mitigation spreads all over the world. In fact, most of the experiences in the new fields of adaptation to and mitigation of climate change are documented in what is known as non peer reviewed literature and in addition it is mostly in non English languages.

Since this is a growing process, it is necessary to face it with appropriated resources and organization. While the basic science of climate change would continue to rely primary on peer reviewed literature, assessment of adaptation and mitigation knowledge, will require an innovative approach.

This literature should be assessed by a systematic work lead by full time scientists to translate to English, when necessary, and review all the relevant non peer reviewed literature. This implies a considerable funding and human resources that are beyond the limits of the actual IPCC.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

There is an expert meeting on this topic scheduled for the beginning of the 5AR cycle. This is a difficult issue, especially when uncertainty has to be communicated beyond the scientific community.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Regarding the data quality assurance and quality control, since IPCC does not produce science, these aspects only can be addressed in the respective assessments and therefore they are discussed by the writing teams in each case. The diversity of science fields, regions and social circumstances make almost impossible homogeneous rules, except for the requirement of the best possible practice.

Regarding the rectification of errors discovered after publication, IPCC is lacking an approved procedure to address them, except for the case of obvious editorial mistakes. Due to recent critics, of which only a few are apparently correct, it is likely that some initiatives for having an approved procedure to deal with such mistakes, will be discussed in the next plenary

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

IPCC was designed with the main purpose of making assessments of the climate change science. Its procedures were not designed to deal with media crisis. Therefore, most of its decisions and eventual changes require some steps that should pass through the Bureau, meeting every 6 months on the average, and through the Plenary that meets every year.

In addition, IPCC has very limited human and funding resources and therefore is not in a position to respond rapidly to media crisis. As well as in other aspects, media and public communication require of a professional team with appropriated resources.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The IPCC is a successful organization that with scarce resources produced policy relevant assessments, which are critical for the climate change negotiation in the UNFCCC and for the public and government understanding of what is a very complex as well as a very important problem for mankind. Its success was based in a network of collaboration between governments, international organizations, and science, but most of all in the support and confidence of the scientific community.

The climate change issue was installed in the international agenda and even with foreseen difficulties, we are entering a time when important decisions are being taken by the more important countries. This would implies profound changes in the energy matrix and in other economic activities including the enhancement of the development of new and alternative technologies and the mobilization of huge financial resources that only to include the developing world are estimated in the negotiations in hundreds of billions of dollars.

These new conditions are expanding in amount and quality the requirements for extracting the relevant information for policy makers from the growing knowledge on climate change related aspects.

The first conclusion is that the assessments of climate change related knowledge should be enhanced with substantial more resources accordingly with the magnitude of the decisions that will be based on these assessments. Second, this change in size will also require a qualitative change that in addition would make the process more flexible to respond to the rapid growth of knowledge and of the changing demands of the international negotiations.

It will be wise if the new model retains many of the present features that have made IPCC successful, specially the governmental participation and the extended use of the scientific community as the basic tool of the assessment process.

The process of change should require a transition time to permit a careful consideration of the best options of organization. This transition should not disturb the present assessment process, critical for the international negotiation.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

In future, the executive level of the IPCC has to be more important with a relevant scientific direction, important scientific staff and greater budget provided as for other UN agencies.

The strategic level would combine, like now, a Plenary and a Bureau that meets more frequently.

Details of the new organization should be carefully consider in a establish period of a few years.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Most roles in WG1

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

I cannot respond to this question from the perspective of a user. However, as someone who has been involved in the scoping process from a scientific perspective, my view is that the process seems to work reasonably well. Governments are consulted prior to the scoping meeting, and in my experience, their views are given considerable weight during the scoping meeting. Governments are subsequently given the opportunity to review the scoping report, and ultimately, they debate and approve that report, possibly with modifications, at an IPCC plenary.

2b. Election of Bureau, including Working Group chairs

The election of the WG1 co-chair for the 5th assessment cycle was unusual because multiple candidates were available. The Panel was unable to complete the election by consensus as it prefers to do. However, the Panel handled the election by vote well, providing opportunities for candidates to present themselves to members and for members to challenge contenders with their questions. The outcome was positive, and I think the Panel was well served by the process.

2c. Selection of lead authors

The process used by WG1 to select AR5 authors was exhaustive. It involved detailed bibliometric research on each of the close to 1000 nominations, followed by careful assessments of the fit between the expertise of nominees and the need for expertise in each chapter. Other considerations included regional and gender balance, as well as the balance between previous experience and the desire to involve younger scientists new to the process.

2d. Writing of working group reports

The actual work of writing the reports is an extremely satisfying process. The work is intense and demanding, and there is no process that I can imagine that involves scientists more extensively in thinking deeply about the implications of their work across a broad segment of the scientific frontier. My estimate is that in the case of Lead Authors, the commitment to serve as an author amounts to the equivalent of about one-half of a person year (PY) of effort over a three year period. The commitment for Coordinating Lead Authors, is roughly double that for LAs, that is, the equivalent of about an entire PY over a three year period. The direct reward, in terms of a publication and its citations, is modest – but indirect rewards, such as those that accrue from having been able to develop a much more comprehensive understanding of a broad part of the science than scientists ordinarily need to achieve for their own work, are inestimable.

2e. Review processes

From my perspective, the review process is about as robust as it can be. The WG1 AR4 report in fact received 4 levels of review, including an informal review of the 0th order draft, expert review of the 1st order draft that was open to all experts, government and expert review of the 2nd order draft, and government review of the final draft and Summary for Policy Makers in preparation for the final approval plenary. This process generated a very extensive set of comments that covered the full spectrum of views. Criticisms that were received that were supported by substantive scientific arguments were very helpful.

My view is that the review process in the AR5 should be open to all experts, as it was in WG1 for the AR4. A further improvement in the review process could be achieved by more clearly defining the roles and responsibilities of Review Editors. One suggestion would be allow time at lead author meetings for Review Editors to meet as a group to discuss their perceptions of emerging issues and determine collective means of dealing with those issues. Another would be to allow time for group meetings between Review Editors and Coordinating Lead Authors to discuss review and response issues in a comprehensive and strategic manner. In order to facilitate and formalize this, a third suggestion might be to create “co-chief” Review Editor positions corresponding, in effect, to the WG co-chair positions, in order to ensure that the review process has suitable leadership and oversight. In addition to overseeing the comment response process, these positions would also have responsibility to oversee the review process in general, and together with the co-chairs and secretariat, ensure that all parts of the report are adequately reviewed.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

I have no direct experience with the preparation of the synthesis report (SYR) and therefore cannot comment very perceptively.

2g. Adoption of report by the IPCC plenary

Again, my experience in this regard is limited. One observation is that the IPCC needs to give some careful thought to how it can avoid either the appearance or occurrence of conflicts of interests, as might occur, for example, when an author takes the floor as a member of a government delegation at an approval plenary.

2h. Preparation of any special reports

I have limited experience in the preparation of special reports. However, the process is essentially the same as that for a full assessment report, with a somewhat compressed schedule. A difficult issue in the special report with which I have some experience was the use of “grey” literature. This is also a concern for full reports. From my limited experience, my suggestions would be that any grey literature considered should be openly accessible, should have been produced via a documented process by a reputable organization, preferably using a thorough review process, and should have identifiable authors – that is, individuals whose identity and

credentials are known, and who are prepared to be held accountable for their assessments and interpretations.

3. What is your opinion on the way in which the full range of scientific views is handled?

See my response to question 2e. I think the essential aspects of this question relate to having an open review process and effective review editor process. Other aspects of this question, such as whether the authorship of the report spans the full range of scientific views, are limited by the range of nominees proposed by governments, the intersection between the expertise of the nominees and the scope of the report, and the scientific productivity and impact of the nominees.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments have four key roles in the process:

- i) they contribute to the development of, and ultimately approve, the scope of the reports undertaken by the IPCC, and thus in effect commission those reports;
- ii) they nominate experts from the scientific community, including their own experts where available, to undertake the work of producing the reports and to serve as review editors;
- iii) they review the reports, thereby providing additional input in the form of questions, suggestions and criticism from their experts; and
- iv) they adopt the final product and give line-by-line approval to the summaries for policy makers.

My experience with the process is that this structured approach maintains a suitable balance between the independent assessment of the science and the needs of governments for specific types of information, with sufficient involvement by the governments to allow them to take ownership of the report that is ultimately adopted. Since the IPCC is composed of representatives from the World's governments, and since the focus is scientific rather than political, it is very difficult for a specific view held by a given country to dominate.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

My experience only allows me to discuss the situation for WG1, and in that case I believe that the use of data sources is likely as comprehensive as it can be. If a given dataset is publicly available, either in its original form or in a processed form, and if that dataset has been used in studies of climate change, climate variability, climate processes, etc., that have been published in the scientific peer reviewed literature, then the information in that dataset has probably been considered either directly or indirectly in the WG1 reports. Regarding the comprehensiveness of the literature assessed, it is always difficult to fully assess the regional peer-reviewed literature that is often published in languages other than English. This is mitigated somewhat by the fact that some types of regional literature are increasingly covered by major abstracting services, such as that of the ISI (e.g., Chinese language literature). Governments can assist by making sure that

they nominate adequate expertise from their regions. With regard to information from the non-peer-reviewed literature, there are certainly circumstances under which it may be appropriate to use such literature, but I think great care is required in these circumstances as discussed in my response to question 2h.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

My experience from WG1 is that uncertainty is generally dealt with adequately, with uncertainty from multiple sources quantified wherever possible. The evolution of the treatment of uncertainty can be seen, for example, in the way uncertainty is incorporated into projections of future warming, which account for an increasingly broad range of uncertainties. The IPCC has been criticized for its AR4 sea-level rise projections, which did not include contributions to sea-level rise from possible rapid dynamical responses of ice sheets to warming. However, in its defense, this aspect of climate science was rapidly evolving at the time, and it would have been inappropriate to assess emerging science upon which the scientific community had not yet reflected for an adequately long period of time. In this case an uncertainty was flagged, but not quantified, which I think was the appropriate action at the time.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Data quality assurance, per se, is beyond the scope of the work of the IPCC since its job is to assess the science. That said, it does have the task of assessing the scientific methods that are used to develop a given data product so as to determine whether we should have confidence in a given estimate, of say, the global mean temperature anomaly. Thus it must inter-compare results that are obtained using different data sources and procedures, and must also assess the reliability of different data sources. But it cannot undertake data quality assurance itself.

Concerning the identification and rectification of errors, the IPCC does react quickly and appropriately by quickly publishing errata in the case of small technical errors that do not materially affect IPCC assessments.

On the other hand, in my view the IPCC has not yet settled on a fully adequate approach for dealing with alleged assessment errors that involve lapses or errors of judgment that were not caught in the review process. These can be categorized into two types, those where the lapse is isolated and has at best limited implication for other parts of the report, and those where the lapse is more general in nature. The IPCC has now adopted a process that I believe it can use to determine whether an alleged assessment error actually occurred, and if so, to classify the error into one of these two types. However, it is not clear if it has adequate procedures that can be used to correct or otherwise deal with these two types of errors.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I am not an expert on media relations and thus you should not place a great deal of weight on my

view. Nevertheless, my personal view is that the IPCC's approach up to now has been reactive, slow and ponderous. Unfortunately, I think it has little option but to remain in a reactive mode. A communication strategy whereby the IPCC attempts to promote itself would likely be perceived as self serving and inappropriate for an organization that has a remit to provide neutral, unbiased assessments of climate science.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The evidence is that the process is sustainable and robust. Despite recent attention, a large number of highly qualified experts were nominated to produce the next assessment report. It would be difficult to think of another process that would be able to produce as thorough or comprehensive an assessment of an extremely complex, multifaceted, science and would also ultimately receive the buy-on of the vast majority of participating governments.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

I think one would have to spend some time in the secretariat to make effective recommendations on its structure and/or functioning. That said, the view from the outside is of an organization that is somewhat ineffective. The overall management of the process, which divides responsibility between a central secretariat (funded jointly by the member governments through their financial contributions), and TSUs (funded directly by the country hosting the TSU) does seem to be appropriate. This process ensures renewal in the TSUs, which I think is important, and a certain level of continuity and corporate memory in a central entity.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

IPCC Bureau Member, Review Editor (assessment reports and special reports)

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

The IPCC was created as a scientific technical body aimed to inform policymakers. Governments are involved in the IPCC at several stages, but most importantly at the beginning and the end of a process. At the beginning, they decide whether to prepare a report and agree on its scope to ensure that IPCC reports respond to the information needs of policymakers.

Scoping and identification of policy-relevant questions/issues is a key component of the preparation process for the IPCC assessments. Scoping meetings are very valuable mechanisms in this context.

Scoping meetings are attended by experts and some representatives from governments to ensure that user needs and scientific aspects are adequately reflected in the assessments. Material available at scoping meetings include comments received from governments, organizations and experts about lessons learnt and future needs, as well as gaps in knowledge identified in the past assessments. The result of the scoping process is then submitted to Sessions of the respective Working Groups which decide on the final outline and submit it to the Panel for acceptance. In the case of the Synthesis Report (SYR) the outline is considered and agreed by the Panel in Plenary Session.

Requests from international bodies (e.g. UNFCCC) or proposals from countries for Special Reports or Technical Papers are also considered by the Panel.

Strengths:

- Consideration of policy-relevant questions/issues since the very beginning of the preparatory process of IPCC assessments;
- Consideration of requests by the UNFCCC Parties on scientific questions/issues, within the IPCC mandate.
- Interaction between climate change experts and government representatives during the IPCC scoping meetings.
- Importance attached to the cross-cutting policy - relevant questions/issues.

Recommendations for improvement:

- Improve the treatment of cross-cutting policy relevant issues across WG reports and the SYR.

2b. Election of Bureau, including Working Group chairs

Elected members of the IPCC Bureau for each assessment cycle should reflect a representative composition that combines scientific expertise, regional balance and diversity of views. This practice has been generally followed by the IPCC.

The growing interest on IPCC activity was reflected in the last election for the IPCC Bureau (September 2008) when a record number of nominations was registered.

Strengths:

- A well balanced elected Bureau is a key pre-condition for the work of the IPCC as intergovernmental scientific institution, considering the key role of the Bureau in very sensitive tasks as the selection of author teams for the IPCC reports.

Recommendations for improvement:

- Highly qualified legal assistance is required during the elections of the IPCC Bureau for properly handling potential conflicts that may emerge as consequence of different interpretations of the existing election procedures.

2c. Selection of lead authors

Candidates are nominated by governments and organizations; with further contributions from members of the IPCC Bureau. The main criteria for selecting authors for IPCC Reports and experts for other IPCC activities are scientific expertise and excellence, as well as ensuring a proper geographical balance and a range of views. Recently, other factors such as gender balance and inclusion of new and younger experts have been taken into consideration. The ability to work in teams and a workable size of author teams are also important aspects in the selection process.

At the earliest opportunity the Secretariat should inform all governments and participating organizations the composition of the author teams for the different chapters. Nominated experts not selected to be Coordinating Lead Authors (CLA), Lead Authors (LA), or Review Editors (RE) are invited to become expert reviewers. Later, during the assessment process, the CLA and LA may enlist other experts as Contributing Authors (CA) to assist with the work.

Strengths:

- Joint effort to properly combine scientific excellence, geographical balance and the diversity of views within the author teams.

Weaknesses:

- Relatively few nominations from certain key geographical areas, mainly developing countries.

Recommendations for improvement:

- Increasing the participation of experts from the developing countries has been a priority for the IPCC work. This should be a permanent goal for the IPCC activities in the future.
- More involvement of IPCC Bureau Members in encouraging nominations by the IPCC Focal Points (FPs) in their respective regions.

2d. Writing of working group reports

The revised “*Principles Governing IPCC Work*”, adopted at the 14th Session (Vienna, 1998) and Appendix A “*Procedures for the Preparation, Review, Acceptance, Adoption, Approval and publication of IPCC Reports*” adopted at the 15th Session of the Panel (San Jose, 1999) – with some amendments - are serving the IPCC until now.

IPCC assessments contained in the underlying Working Group Reports consider in detail relevant scientific, technical and socio-economic literature, which is distilled into summaries that capture the state of knowledge at the time of the assessment.

The IPCC does not carry out original research. The author teams use their expertise to judge what should be included in the assessment based on the available literature. Normally, scientific disagreements or dissenting views are reflected in the text of the respective chapter. This is an iterative process because questions may be also raised during the expert and government reviews. The author teams then address such issues under the guidance of the Review Editors. Criteria for high quality data can vary based on the particular field of knowledge, topic, and type

of publication.

According to the IPCC Principles and Procedures, contributions to the IPCC assessments should be supported as far as possible with references from the peer-reviewed and internationally available literature. However, in many cases materials relevant to IPCC Reports, in particular, information about the experience and practice of the private sector and local communities, in mitigation and adaptation activities, are found in sources that have not been published or peer-reviewed (e.g., industry journals, internal organisational publications, non-peer reviewed reports or working papers of research institutions, proceedings of workshops etc). Therefore, additional procedures have been provided to make all references used in IPCC Reports easily accessible and to ensure that the IPCC process remains open and transparent.

Successive Assessment Reports (AR) focus on what is new since the previous AR, but each of them presents a complete picture rather than just an update.

Strengths:

- Assessment process targeted to provide policy-relevant scientific information.
- Author teams are required to reflect scientific disagreements or dissenting views in the text of the respective chapter.
- IPCC assessment reports combine update information and a complete picture of the assessed topics.
- Author teams are required to support their assessment as much as possible on peer-reviewed and internationally available literature, with the possibility to combine this with other relevant sources from private sector, local communities, etc. by following the judgement of the corresponding author team and the existing procedures for using such literature.

Recommendations for improvement:

- Better use of “bridge authors” (across WGs) would help in improving the treatment of cross-cutting issues across the WG Reports and the SYR. This would contribute to increase the integration among the three IPCC WGs.
- Preserve, as much as possible, the balance (concerning expertise, regional representation, and different perspectives/views) during the whole assessment cycle. This is valid in some cases when authors are removed for different reasons and need to be replaced.

2e. Review processes

The review process generally takes place in three stages: expert review of IPCC Reports, government/expert review of IPCC Reports, government review of the Summaries for Policy Makers (SPM) and the Synthesis Report (SYR).

Lead authors are required to consider every comment, address it according to its scientific merit and reflect it as appropriate, in the revised draft. Responses by the author teams to comments are recorded along with the comments in a spreadsheet. All written expert and government review comments will be made available to reviewers on request during the review process. After the completion of the report the comment files are maintained in an open archive for at least five years.

Review Editors (RE) are assigned to individual chapters, technical summaries and the Synthesis Report (normally two per chapter) to ensure that IPCC reports provide a balanced and complete assessment and that all substantive expert and government review comments are afforded appropriate consideration.

Strengths:

- IPCC assessment products are widely reviewed by experts and governments during the assessment cycle.

Weaknesses:

- Relatively few review comments from certain key geographical areas, mainly developing countries.

Recommendations for improvement:

- More involvement of IPCC Bureau Members in encouraging review comments by the IPCC Focal Points (FPs) in their respective regions.
- Strengthen, in practice, the contribution of the Review Editors in the assessment process, according to their mandate.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

The Synthesis Report summarizes and integrates the findings of the three Working Group reports and provides a synthesis that specifically addresses the issues of concern to policy makers in the domain of climate change. The SYR should be a synthesis and not just a cut and paste job. As mandated by the IPCC procedures, the complete SYR output would consist of an SPM and a longer report.

It is suggested that the AR5 SYR would be framed around a series of topics rather than questions (the TAR was framed around questions whereas the AR4 was framed around topics). The proposed maximum period between AR5 WGI SPM and AR5 SYR approval is 12 months. The suggested steps to be taken in order to complete the AR5 SYR are the selection of the core author team, and the corresponding Technical Support Unit.

As for the SYR of previous IPCC assessments, several issues for which a consistent treatment by all three Working Groups is highly desirable have been identified so that a coherent synthesis can be developed.

Strengths:

- In previous IPCC assessment cycles, the SYR has been a highly valuable, widely diffused IPCC product.
- The SYR offers a synthetic perspective of the main findings of the IPCC assessments.
- The possibility of early identification of cross-cutting themes among the three WGs, and proper treatment of these themes across the WGs, would considerably contribute to the quality and relevance of the SYR.

Recommendations for improvement:

- Improve the treatment of cross-cutting issues across WG reports and the SYR.
- Reinforce the synthesis component of the SYR.

2g. Adoption of report by the IPCC plenary

Governments are involved in the IPCC at several stages, but most importantly at the beginning and the end of a process. At completion of a report approval/acceptance/adoption is done by government representatives at plenary Sessions, with the assistance of authors to ensure consistency of all elements of an IPCC report with the scientific technical assessment.

Strengths:

- It is an intergovernmental process, and this makes IPCC products unique in terms of the consensus that they reflect.

Challenges:

- The role of authors in keeping consistency of IPCC reports with the scientific and technical knowledge should be fully preserved and respected.

2h. Preparation of any special reports

Requests from international bodies (e.g. UNFCCC) or proposals from countries for Special Reports (SR) are initially discussed at a plenary Session of the Panel. If there is sufficient support the Panel often authorizes that a scoping meeting or a workshop is being held. The report of a scoping meeting normally contains a proposal for scope and outline. Based on the recommendations arising from the scoping meeting the Panel decides whether to prepare a Special Report and provides further guidance on scope and outline.

Strengths:

- IPCC Special Reports offer the possibility of in-deep assessment of specific themes, when there is abundant availability of specialised literature.

Challenges:

- IPCC SR should be carefully designed and planned for them to complement and being supportive of, rather than interfere, the path of the integrative IPCC assessment reports.

3. What is your opinion on the way in which the full range of scientific views is handled?

There are possibilities for incorporated the full range of scientific views from the very beginning of the IPCC assessment cycles, through the following channels:

- a. the composition of the IPCC Bureau with a representative range of scientific views;
- b. the selection of the author teams (by the IPCC Bureau) with a wide range of perspectives;
- c. the author teams are required to reflect scientific disagreements or dissenting views in the text of the respective chapter;

- d. the three stages review process, including the expert review of IPCC Reports, the government/expert review of IPCC Reports, and the government review of the Summaries for Policy Makers and the Synthesis Report;
- e. the activity of the Review Editors in ensuring that IPCC reports provide a balanced and complete assessment and that all substantive expert and government review comments are afforded appropriate consideration.

In my view, IPCC products till now reflect increasing efforts by the IPCC community in incorporating a representative range of scientific views into the IPCC assessments, but there is still room for improvement in this direction.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

In my opinion, this intergovernmental process makes IPCC products unique in terms of the consensus that they reflect. However, the intergovernmental perspective should be properly combined with the expected role of authors in keeping consistency of IPCC reports with the scientific and technical knowledge. Till the present, the IPCC has been able to combine these two perspectives.

Governments are involved in the IPCC at several stages, but most importantly at the beginning and the end of a process. At the beginning, they decide whether to prepare a report and agree on its scope to ensure that IPCC reports respond to the information needs of policy makers. At completion of a report, approval/acceptance/adoption is done by government representatives at plenary Session, with the assistance of authors to ensure consistency of all elements of an IPCC report with the scientific technical assessment.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The IPCC does not carry out original research; instead, the IPCC author teams assess the state of the science of climate change in the available literature. The author teams use their expertise to judge what should be included in the assessment based on the existing literature. Author teams are required to support their assessment as much as possible on peer-reviewed and internationally available literature, with the possibility to combine this with other relevant sources – including non-peer reviewed literature - from private sector, local communities, etc. by following the judgement of the corresponding author team and the existing procedures for using such literature. The process of literature assessment should be open and transparent.

Following IPCC principles and procedures would ensure that all relevant statements and lines of discussion are properly substantiated by adequate literature, and that all relevant text undergoes appropriate review.

Suggestions for improvement:

- Under certain circumstances, non-published / non-peer reviewed literature - if properly collected, assessed and registered according to existing IPCC guidance -, is a valuable source of scientific, technical and socioeconomic information for IPCC climate change reports. This literature provides relevant inputs from local communities, non-governmental organizations, industries, and other stakeholders.
- Author teams and Review Editors should receive detailed indications since the very beginning of the IPCC assessment cycles on how to properly handle non-published / non-peer reviewed literature, in the context of their specific WG.
- Review Editors should monitor the use of available literature, including non-published / non-peer reviewed literature since the very beginning of the IPCC assessment cycles.
- The need to increase the range of scientific literature in the various languages - to be assessed by IPCC author teams - has been previously acknowledged by the IPCC, but practical progress in this field is still limited.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The IPCC does not carry out original research; therefore the quantification of uncertainties in data is a matter for the authors of the original publications. However, IPCC author teams are provided guidance about applying likelihood and confidence language to the conclusions of their assessment.

A guidance note for AR4 author teams referred to approaches to developing expert judgments, evaluating uncertainties, and communicating uncertainty and confidence in findings that arise in the context of the assessment process. It highlighted a distinction between levels of confidence (used to characterise uncertainty) in scientific understanding and the likelihood (probabilistic assessment) of a specific result. In practice, during the AR4 assessment process Working Groups adapted and applied the uncertainties guidelines to meet their specific needs.

A small cross-Working Group meeting is planned in July 2010 to address the important issues of uncertainty, its terminology, use, and coherency among the Working Groups for the preparation of the AR5. This meeting will build upon previous work with the goal to develop further guidance in this field.

Suggestions for improvement:

- The highest priority should be attached to the characterization and handling of uncertainty in each of the working group reports and the SYR during the preparatory phase of the AR5.
- The characterization and handling of uncertainty in IPCC reports should combine the need for a comprehensive approach (as consistent as possible across the WGs), but reflecting, at the same time, the specificities for each of the WGs.
- Author teams and Review Editors should receive detailed indications since the very beginning of the IPCC assessment cycles on the guidance for characterizing and handling of uncertainty in the context of their specific WG.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Ensuring data quality is one task of the author teams during their assessment of the scientific literature. This is an iterative process as questions on data quality may also emerge during the expert and government reviews. Criteria for high quality data can vary based on the particular field of knowledge, topic, and type of publication. The guidance of the Review Editors concerning data quality is a key component of the quality control mechanism of the IPCC during the assessment cycles.

The IPCC follows the established practice for scientific publications in case of errata (usually typographical errors). This kind of errors are posted on the IPCC website along with the online versions of the reports, and to the extent feasible attached to the printed version of the reports.

The IPCC does not have any written procedures for handling other types of errors that are discovered after a report has been approved/accepted/adopted at a plenary Session of an IPCC Working Group and the Panel.

Suggestions for improvement:

- In my view, one of the first priorities for the IPCC at present should be the reinforcement of its quality control mechanisms for diminishing to a minimum the amount of errors in its assessment reports. The training of authors and Review Editors (many of them new-comers to the IPCC process) is a critical component for achieving this goal.
- Special attention should be attached to the three-step review process of the draft reports in order to make it much more open and participatory. This would ensure errors being detected, as much as possible, within the assessment cycles.
- The IPCC community should be aware that errors (other than typographical ones) discovered after the publication of the reports considerably damage the image and reputation of the IPCC. Defining specific procedures for handling this kind of errors is a crucial task. These procedures should involve IPCC officials & authors from the WGs/chapters containing the errors as well as current IPCC officials & authors of the corresponding WGs/chapters, under the leadership of current IPCC officials.
- The rectification of errors should be a process as expeditious as possible, within the IPCC rules & practices.
- Members (governments) of the IPCC and observers should be encouraged to participate as actively as possible during the IPCC review process, to detect errors as much as possible within the assessment cycle. Unilateral or pluri-lateral initiatives by Members of the IPCC and/or observer organizations to carry out additional review processes after the publication of the reports should be discouraged.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The communication and outreach strategy has been part of the IPCC performance from the early years of the IPCC, with the support of the IPCC parent institutions (WMO & UNEP). One of the controversial issues has been how to strike the balance between serving different user groups in a pro-active manner.

The IPCC communication and outreach strategy has considerably contributed to the diffusion of the IPCC products, but it is needed to better shape and conduct this activity into the future, taking into consideration the emerging challenges, as well as the rapidly changing user-needs in this field. A new communication strategy is now under discussion in the IPCC.

Suggestions for improvement:

- The communication with the media and general public should be a key component of the IPCC activity, within the mandate and rules of the IPCC.
- A robust communication strategy, supported by highly qualified personnel at the IPCC Secretariat, should be a priority for supporting and outreaching the IPCC activities in the coming years. This is particularly important nowadays when the international debate on climate change is widely diffused all around the world, in a context characterized by the fast development and globalisation of informational & communication technologies.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

In my view the IPCC assessment model is a valuable vehicle to fulfil the IPCC goals, within its mandate as intergovernmental institution that provides policy relevant (but not policy prescriptive) information on scientific, technical and socioeconomic dimensions of climate change, in an objective and balanced manner. This model offers vast possibilities for combining scientific excellence with a participatory process that should include a diversity of views and a balanced regional representation. The *Principles Governing IPCC Work* (IPCC, 1998) provide a clear framework for an open, transparent and robust process.

Having integrative assessment reports during cycles of around five years allows for a good articulation of update information on specific themes, and keeping the whole picture of the evolution of the scientific debate on climate change, on the basis of relevant available literature.

During the assessment cycle, integrative assessment reports dynamically interact with other IPCC products (Special Reports, Technical Papers, Methodological documents, Proceedings of IPCC Expert Meetings, etc.), which provide in-deep knowledge on specific areas of research & practice.

Rather than suggesting an alternative process to the IPCC assessment model, I would advocate for improving it by making it more flexible and adjusted to user-needs, more participatory, and therefore less exposed to criticisms. Suggestions for improvement, mentioned in my responses to other questions in this questionnaire are, in general sense, also valid here.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The activity of the IPCC demands a well defined management structure and strong secretarial support, taking into consideration the complexity and sensibility of the IPCC mandate as intergovernmental scientific institution; the dynamics of the assessment process; the challenges derived from the need to articulate the activity of thousands of scientists who work for the IPCC

on voluntary basis; the need of systematic interaction with the media and general public, among other requirements.

Concerning the *management of the IPCC* it is essential to keep, as much as possible, the operative flow of information and transparency among the several components of the process (IPCC Bureau, WG Bureaux, Secretariat, TSUs, National IPCC Focal Points,...), with a good coordination among the IPCC Chair, Vice-chairs, WG Co-chairs, IPCC Secretariat and WG TSUs for strategic considerations.

Regarding the *IPCC Secretariat*, it is essential to foster the institutional capacity of the IPCC Secretariat to make it properly responsive to the operative work of the IPCC leadership, experts involved in the assessment process and representatives from the IPCC Members (governments), observer organizations, media and general public.

Concerning the *funding structure to support the assessment process*, it should be explored the possibility of providing some institutional financial support to the Coordinating Lead Authors (CLAs) of the IPCC assessments, to facilitate their activity. Some financial flexibility for the operation of the IPCC Secretariat, particularly under special circumstances during the period between two IPCC Plenary Meetings, should be also explored.

II. Any other comments

I highly appreciate and welcome the independent review that is being carried out by the IAC Review Committee. I hope this review would provide practical recommendations for improving the IPCC activity in the future.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead author, IPCC Bureau member. Also Review Editor of a special report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

General: As any other activity, there are some positive points and some negative. In fact these procedures are very huge and hard. When man looked at these procedures from the out, he suppose , they may be much better from now. But operationally, when IPCC face with many different levels in all things including knowledge of experts from developing and developed countries, , views , references, level of researches , level of requests and necessities,... management of these are frankly very very hard.

Initially, I have worked with WMO and I entered to IPCC procedure at 2003. I have attend in many sessions of IPCC, including IPCC session, Bureau meeting, scientific workshop,... . I have found that the most subject for solving the problems and improving report and also activities for

example geographical balance , gender balance , experience balance in the IPCC procedure and many substantial criteria in selecting lead author or using of regional information and using of grey literature have been discussed. And many approaches have presented, but in practical, it is not possible. For example for selecting lead author, when a region introduce only a few expert (non-professional) or anyone in a topic! What does IPCC do?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

Refer to general view

2d. Writing of working group reports

This procedure (a, b, c , d, f, and g) are excellent. I have no comments in this regards except appreciation of organizers .

2e. Review processes

I recommend to review the report by critics too.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

The IPCC are able to provide the special reports with different titles. It is possible, because the IPCC have understood the mechanism of providing the special reports by contribution many experts from all the world and using different experience. I suppose, if the IPCC have more financial resource, it will be possible.

I have found that many scientists interested in contribution on the assessment reports and special reports too, of course without any financial claims . As there are limitations for being lead author of assessment reports , I suggest to increase the number of special report with different topics and consequently using these human resources.

3. What is your opinion on the way in which the full range of scientific views is handled?

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

There are different levels. Some of them contribute more than the other.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

As I wrote at the my general views, this subject has been discussed many times. But I personally suggest after approving any outline at the general session, the focal points of IPCC can collect the names and the articles and the result of projects that have done by their countries in non-English language. This action may give the IPCC, the result of researches in the countries and regions. Furthermore, the entire article including non-peer-reviewed literature and grey literature are mentioned too.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Although The IPCC don't measure any climatic parameter, but IPCC handles many data observation that have been observed by the other responsible organization. I suppose IPCC should appreciate WMO for some activities in this regards too .

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I suppose , that media and general public do not know the IPCC and It's activity and the result of this important Intergovernmental activity. This communication must be improved. If the general public improve, the level of requests from IPCC improve too .

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

At present, The IPCC secretariat is very small group, but they work well. Frankly, I have not found any negative points in this group. But I am sure with expanding the work , the secretariat have to be bigger.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Review Editor, Drafting author (Technical Summary and Summary for Policy Makers), Member of the Core Writing Team of the Synthesis Report, Expert Reviewer

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

I have no particular idea

2b. Election of Bureau, including Working Group chairs

I have not participated in election of bureau members nor working group co-chairs.

2c. Selection of lead authors

I have not involved in the selection of lead authors. Instead I have experiences to recommend candidates of LAs to the Government. On that occasion I was informed only the final result of selected LA names. I have no particular ideas but I think that it might be better to make the selection process a little more transparent. If we are notified the selection criteria to some extent we can find and recommend candidates better suited to the role. It may be better to have feedback on selection criteria from the body of recommendation.

2d. Writing of working group reports

In my observation as an RE and TS and SPM drafting author each chapter is written by role sharing among LAs depending on each LA's expertise. It is quite understandable as a clever and efficient way. However, in my view it is better to have more collaboration among LAs in the same chapter. I found an error in the draft as a TS/SMP drafting author which was escaped from attention of chapter LAs in the chapter writing process. It was rather a simple mistake (at least in its face) and could be found and fixed if some LAs other than the direct author of the part read that part like a reviewer. I understand that CLAs should have first responsibility but checking by more people leads to more reliable writing.

2e. Review processes

As an RE I worked intensively to check whether CLAs and LAs respond properly to comments from experts and governments. I believe I had done a good job.

In the case of WG II report in a chapter, an erroneous information invaded. I am not sure whether this error was escaped from the REs examination or added at the latest stage of drafting because I happened to find a strange modification of the second order draft (SOD) of the same chapter which did not respond to any of expert or government comments on SOD as will be written separately later in 11.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Working as a member of the CWT of the SyR I have been questioning whether this is really "synthesis" or not. The most serious point I remember is that the Table SPM 5 which came from

the WG III was simply repeated there, even though we (at least I) insisted that we need to remark in the report that the temperature rises listed in the first (left hand) column of each category are the equilibrium temperature rises which could be realized long time (many centuries) after the stabilization. Otherwise readers may confuse them with the temperature rise within a century or two whose magnitude remains about 65 – 70% (year 2100) to 80% (year 2200) of the final equilibrium values according to the WG I report. This point is important for deciding mitigation strategy because what we should concern is the actually realized temperature in a century or two, not the equilibrium temperature to be realized only long time after (several centuries) under a constant stabilization concentration. The concentration can be lowered in a time span of a few centuries by reducing the GHG emissions lower than the natural removal rate so that the equilibrium temperature values are not so important. These points are very important as findings of WG I which may be useful as the basis for finding alternative way of mitigation strategy (different emission pathways). For this reason I tried to include a remark for these points in the text close to the position of the Table SPM 5, but it was not understood.

In my observation, discussion and communication among CWT members from 3 WGs were not good partly because of shortage of time. Since 3 WG members have different backgrounds we have to make efforts to listen to others as much as possible in a limited time. If we start the work earlier and take more time we will have more discussions.

2g. Adoption of report by the IPCC plenary

Adoption of a report by line by line approval of the SPM is a reasonable procedure. However, discussion and examination process actually taking place in the IPCC plenary is not so efficient. There may be some way to improve.

2h. Preparation of any special reports

I have no particular idea about his item.

3. What is your opinion on the way in which the full range of scientific views is handled?

If “the full range of scientific views” means to include so-called skeptic’s opinions, we must mention those scientific opinions published in reasonably prestigious refereed journals, if appropriate in the context, in the case of WG I. I have no particular idea in the case of WG II and III.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

In considering final objectives of the IPCC reports current state of governments’ participation in the IPCC process is basically understandable. There may be many points to improve the process when we examine it one by one.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the

literature used, including non-peer-reviewed literature?

Since I have not experienced to work as an LA I do not know how every LA writes the report. I suppose that review articles appearing in journals of related fields are utilized as the basis. Then in organizing materials (reviews) LAs can go back to individual source literatures referred in the review and make his/her writing more suited to the IPCC report. I suppose that such process may be laborious and time-consuming but within a reasonable or acceptable limit. This is for the WG I report.

As to the WG II report I agree that references to non-journal materials are necessary. Especially for regional impacts and adaptation most of useful materials are in technical reports issued by national research institutes. Generally those materials are not written in international languages. Without using those materials it is difficult to produce a useful report. Since “scientific knowledge” for the purpose of impact assessment and adaptation is not the same nature as those for the WG I, we need not stick to the same criteria. Since individual studies carried out by governmental agencies and national research institutes are intended to contribute to regional impact assessment and/or adaptation strategies, those materials are already used effectively for the same purpose of the WG II.

Thus in relation to the issue how to use non-standard materials it appears that we have to reconsider the nature and objectives of WG II report.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The current way of characterization of uncertainty seems to work well. Actually I have heard almost no complain from outside people. It is rather surprising that the characterization of uncertainty is accepted by society though it is supposed to be difficult. Perhaps this is due to efforts of people contributing to earlier IPCC reports.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Since IPCC reports are written based on already published literatures, data quality is assured by respective scientist community except for the case of Himalaya glaciers which can be regarded as an exceptional accident due to careless mistake. As pointed out in 5, however, for WG II report perhaps we have to use more non-standard materials, then we have to prepare for control of data quality hereafter. At the moment I have no particular suggestion for that.

About how to handle errors discovered after the publication of reports, I wonder whether IPCC has no practice so far. If there is no formalized procedure at present, IPCC must discuss the matter and establish the procedure quickly. Together with this more important is how to discover mistakes and errors after the finalization of the draft by IPCC-involved scientists body by themselves.

The problem of Himalaya glaciers could be found sooner and some response could be done even

if it had been escaped from LA, CLA and RE's attention. From my experience working as TS/SPM drafting author, if there are some people within TS/SPM team who are specialized to check the whole volume of a report paying attention to the basis of important findings, simple errors or erroneous statement judged from expert's view point could be found and corrected, if it is still in time. In conjunction with such self-review process we need to establish correction procedure after finalization of the drafts and after publication of the reports.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

A most serious problem in IPCC's communication with outside society including media is that most of people consider that IPCC makes recommendation regarding emission strategy. In short, media and politicians quite often quote the words "IPCC's scientific finding" to justify particular mitigation strategy or emission reduction targets. Because of G8 Summit declaration in 2007, 2008, 2009, it is widely considered that "halving GHG emissions by 2050 to avoid dangerous climate change" is a scientific requirement expressed by IPCC. IPCC and involved scientists must be careful in communicating with media to clarify that IPCC is not to make policy recommendations.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

In my view the role of IPCC has changed after the issue of AR4 in 2007. Until that time the most important role of IPCC is to send alarming message to society and policymakers. In this situation alarming that global warming is real and emphasizing danger of climate change is of central importance and saying so in one voice is also crucial.

Around and after the issue of AR4, however society, especially in international policy arena climate change has been accepted and international leaders are talking about emissions reduction. Under this conditions, the role of IPCC must be different from the one before AR4.

Perhaps WGI activity may remain basically the same as before because it concerns with global scale climate change projection and the central issue is to improve reliability through international collaboration.

As to WG II, as mentioned in 5, impact assessment and adaptation strategy on regional scale is the matter of concern of clients (governments) and direct communication with scientists through funding support in each nation will become enhanced. Under this situation global overview is still needed for world-wide decision making, so that some new structure might be created.

Regarding WG III now each government has its own mitigation strategy situation may be similar to WG II.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

I have no particular suggestions.

II. Any other comments

(i) As mentioned in 2d, I have experienced as a TS/SPM author of the WG I report to discover errors arising from careless mistake which had remained after finalization by chapter authors. Specifically, one is about temperature rise after the stabilization as shown in Fig SPM5 of the WG I report. From the temperature measure shown on the vertical axis, the value at 2100 is about 0.6°C. However if one look the curve carefully the difference between 2000 and 2100 is not this magnitude but is smaller, about 0.4°C, because the temperature rise at year 2000, the time of stabilization reaches about 0.2°C. The origin of this difference comes from that the definition of the base point to measure temperature rise was set as the average over 20 year period, 1980 – 1999, whose middle point is 1990. The small difference 0.2°C may be negligible for other cases, but particularly to the case of year 2000 stabilization its contribution is significant. When we correct this the temperature rise after stabilization becomes 0.4°C while the rise until that time is about 0.8°C. This is contrasting to the case where the small difference was not corrected to give temperature rise until and after 2000 (stabilization) are the same magnitude, 0.6°C. The implication of this fact (if correct) is of great significance. Even if we stabilize the concentration there will be more temperature rise comparable to the already observed temperature rise. A similar statement is found in a referenced literature.

My analysis of the occurrence of this erroneous statement is due to background that climate scientists consider that one should send alarming message to society. Thus a result to match this view was accepted and a simple apparent mistake was overlooked. In another part about the ratio of realized temperature rise to the equilibrium rise mentioned in 2f, a similar result was shown which came from again through another careless mistake. It was also escaped from chapter author's attention.

I am not sure whether my analysis going back to general background is correct or not, but these errors could be found and corrected by other LAs, if the draft was carefully read by them. As mentioned in 7, TS/SPM authors' overall review may also be efficient.

(ii) A questionable point in WG II AR4 concerning Himalaya glaciers

In connection with the erroneous statement regarding the fate of Himalaya glaciers in the WG II report, I checked related parts of the report and then found the following questionable point.

In the Executive summary of Chapter 3 (p175) there is a sentence “More than one-sixth of the world's population live in glacier- or snowmelt- fed river basins and will be affected by the seasonal shift in streamflow, an increase in the ratio of winter to annual flows, and possibly the reduction in low flows caused by decreased glacier extent or snow water storage (high confidence)”.

Similar sentences appear several places in Chapter 3 Water and Chapter 10 Asia and also in corresponding parts in TS and SPM. The above quoted sentence may be correct, even though it could be easily taken to have exaggerated implications. The problem arises when “snowmelt” is

omitted to leave only “glaciers”. Actually in Chapter 10.4.2.1 (p483), it is written “Climate change-related melting of glaciers could seriously affect half a billion people in the Himalaya-Hindu-Kush region and a quarter of a billion people in China who depend on glacial melt for their water supplies (Stern, 2007).”

Though I am not a glaciologist it is easily supposed that distinction between waters from melting glaciers and meltsnow is difficult and only melting of glacier cannot supply large fraction of big rivers to feed hundreds of millions people.

There are two problematic points.

- (1) Tracing back we can easily find that the origin of the expression is in a review article, written by T.P. Barnett et al. “Potential impacts of a warming climate on water availability in snow-dominated regions” (Nature Vol. 438, p303 – 309, 2005). As understood from the title this review treats mainly impacts of snowmelt on water resources and those of glaciers melting is touched upon shortly. However, unfortunately in the original text of this review in the part of Himalaya glaciers (p306), only melting of glaciers is mentioned perhaps through careless omission of snowmelt. Further tracing back the literatures quoted in the review we found that individual researchers treat snow- and glacier- melt together. By the way there are many questionable points in this part (Himalaya) of the review which disagree with referred original papers.
- (2) The sentence in Chapter 10.4.2.1 (p483) is written referring to the Stern Review (2007). However, so far as I investigated by accessing the IPCC database this sentence and the following one were not found in the second order draft (SOD). It appears that they were inserted at the latest stage. But in the list of Experts and Governments comments on SOD, there are no comments to suggest to include these.

From these analysis I have a similar impression to the case of (i), namely many LAs of the report tend to emphasize dangerous aspects of climate change to send alarming message to society.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Supported government’s involvement in the IPCC Plenary and report adoption process, lead author, review editor. Also reviewer and participant in scoping meeting of a special report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

The changes that have occurred in this process have been positive. The weakness of the process is the limited flexibility to deal with questions that emerge during the assessment process (quite likely considering the length of the assessment process). What flexibility is there in the process to deal with emerging issues, especially considering the resources that are invested in the

assessment once the process begins?

Improvements could be made by making the policy questions, including the rationale for each and the set of questions as a whole, an official document of the IPCC. The resulting report should have status along with the resulting assessment. In terms of being able to deal with emerging policy questions, greater use of special reports and task forces (potentially lead by members of the bureau and appropriate science lead) is one option.

2b. Election of Bureau, including Working Group chairs

The process is sound in that it achieves the goals of identified leadership and balanced regional representation.

Comment related to the role of the bureau - bureau members may need to take on more responsibilities, including stronger participation in (and ownership of) the assessment process, especially in terms of questions related to relevance to the policy questions and taking on more ownership of the resulting reports, especially the summary for policy makers and synthesis report.

2c. Selection of lead authors

Once again the process continues to improve with visible results relative to identified goals. I would suggest that there is a need to better prepare the lead authors for their roles within the intergovernmental assessment process (including a pre-briefing exercise involving the lead authors with previous authors sharing their experiences)

2d. Writing of working group reports

The process continues to improve with engagement of the author teams and opportunities for chapter interconnectiveness, at least at the Working Group level. Drawing out linkages across the Working Groups during the preparations needs some further consideration and focused effort.

Although adding to the commitments of the authors (and to the resources required), there is the need for stronger cross-Working Group collaboration when writing the reports and individual chapters, especially on the aspects of the report that are intended to address the policy questions but also along the lines where subjects are linked. A number of subjects are linked, or should be better linked, including WG I and II on impacts and associated feedbacks, WGI and III on mitigation and concentration pathways, and WGII and III on sustainable development and the close links between adaptation and mitigation. The associated lead authors and Working Group chairs need to be involved in this process, but requires the lead of the WG chairs to facilitate.

2e. Review processes

Efforts to improve these processes continue and are a substantial improvement from where this began. Recent slippages are reflective of an evolving science base and assessment process, as well as the changing author and review editors and increasing pressures on them.

The introduction of a stronger and recognised challenge function role for the review editors may hold some promise and be worth considering.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

As mentioned earlier, a stronger role for the bureau in the preparation/review of the SPM and the Synthesis report may be worth considering. There is a need for the bureau member(s) to take and been seen to take ownership of these documents. Another possibility is to strengthen the role of the review editors to include the SPM and to establish a strong review editor function as part of the Synthesis report (appropriately identified review editors considering the intergovernmental nature of this report and the need for it to be policy relevant).

2g. Adoption of report by the IPCC plenary

This is a long, arduous, but essential component of the assessment process. It works, but to many it is less than satisfying. I would also suggest that it is not always subject to the same rigor requirements as the assessment itself.

It may be helpful if those portions of the text that do not stand up to government scrutiny are recorded, including the rationale, and that this information was available for further consideration within the IPCC process. This may be the case, but from some perspectives, it appears that the affected material and the related arguments are swept under the rug in the context of the IPCC process.

2h. Preparation of any special reports

There is a need to make more effective use of special reports, with a process for nomination / identification of these made much more open and transparent. The rigor of the special report assessment process should be the same as that of the main assessment.

I would expect more cross WG special reports and that there will be a need for special reports that address a specific policy questions and those that shed light on evolving science, adaptation and mitigation issues. These reports can also offer an opportunity to address a fast evolving science component that cannot wait (relevance to impacts on conclusions drawn during the latest assessment) the undertaking of the next major assessment

3. What is your opinion on the way in which the full range of scientific views is handled?

As this is a scientific assessment that aims to inform policy, I would expect that skepticism would be embraced as an integral part of the assessment. This needs to continue to be encouraged.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

This is a difficult situation on which to comment as the fact that IPCC is an intergovernmental panel and not a scientific panel is often misunderstood or at least not always communicated correctly (or universally accepted by all). As such, it would be naïve to expect that the governments will play various roles within that process, including those that are politically motivated, albeit necessarily based on the science. This is the reality of an intergovernmental panel.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Considering the evolving nature of the science, the assessments would be lacking if alternative sources to peer-reviewed literature were not considered. The key is rigor in terms of consideration of that source of information. This must include full disclosure and consideration of the pedigree and uncertainty of the data and information. This requirement necessitates dedicated resources for QA/QC working with the author team and bureau (see question 7).

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Consistency and rigor, along with transparency is essential.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The rigor of the data/information QA/QC processes continues to evolve as the number and nature of the data / information that are the basis of the assessments also evolve. This must continue.

The inclusion within each WG TSU and special report team of a QA/QC capability working with the authors and the associated bureau members is paramount. This could be strengthened with a similar but continuing coordination position within the IPCC Secretariat.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Communications within the IPCC needs to continue to move forward with the communications in the real world, recognizing the roles and potential (both positive and negative) of various types of communication. Communications with the media and general public is evolving using different means and the IPCC will need to consider how best and appropriately to respond to this evolution. Traditional means of communicating with the media and the general public appear to no longer be sufficient.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Periodic snapshots have played a significant role in moving the science forward and informing

policy. There is some question as to whether these are sufficient (or necessary). Greater use of targeted special reports may be more appropriate.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The fact that an assessment lives on beyond its adoption and presentation suggests that there is a need for continued support for an assessment and its team post adoption and potentially for a number of years. Obviously the support required post adoption is quite different than that during the assessment preparation and adoption process. Considering the present governance model, this requirement falls on the secretariat. There may be some additional support available should one or more of the assessment TSUs continue, but this may not always be the case.

As currently structured and funded, one could question whether the IPCC secretariat is capable of providing the needed support, especially once a subsequent assessment process begins.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Coordinating Lead Author, IPCC Bureau member, Review Editor (chapter, Synthesis Report)

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

In my view the IPCC should not be setting out to answer “policy questions” – that is the role of policy analysts and policymakers in Governments. What governments should be able to expect from the IPCC is an assessment of policy-relevant science, to inform their decision-making on “policy questions”. (In these answers I am treating “science” as shorthand for all of the knowledge assessed in an IPCC report – it may include economics, engineering, technical and social science knowledge as well as physical and biological science).

I think the process currently used for scoping the Working Group Reports is a strength of the IPCC, in that it involves both expert scientists and government representatives in the scoping meetings. This way the Government representatives are able to argue for ensuring that the science relevant to their policy questions is covered in the chapter outlines developed through the scoping process, while the experts ensure that important areas of developing science knowledge are covered and that issues identified in the approved chapter outlines are ones for which there is an adequate scientific literature to allow an assessment.

The scoping of a Synthesis Report is more challenging, as it is expected to provide a concise assessment of policy-relevant science which is accessible to busy policymakers, and a synthesis of relevant findings from across the Working Groups. However I feel that a scoping process

involving both subject experts and government representatives is again appropriate.

2b. Election of Bureau, including Working Group chairs

While I am pleased with the quality of the Working Group co-chairs elected in the last (2008) elections, I do feel that the election could have been run more tightly and would have been improved if the legal expert present during the election had been prepared to give rulings that were more definitive. (We finished up with three Co-Chairs for Working Group III as a result).

The main weakness with the present rules covering election of Bureau members is that they can allow a situation to develop where some of the Working Groups Bureaus do not include members from all of the WMO regions. (This was the case with Working Group III in the 2008 elections – Regional Association V (SW Pacific) has no representative of the WGIII Bureau). A task group is currently looking at the rules of elections, and I hope that they will develop a solution to this problem so that it does not occur at the next election (2015?).

2c. Selection of lead authors

From my experience, the Working Group Bureaus work very hard to establish a slate of lead authors which has a good regional and developed / developing country spread, while maintaining high scientific quality and an appropriate spread of expertise for individual chapters. This is a strength of the current process.

However the shortage of suitable nominations from some regions is a major constraint. Partly this is an unfortunate result of the lack of capacity in some research topics in some developing countries. But in some cases it may also reflect a lack of effort by IPCC Focal Points (who are generally responsible for nominating experts from their countries) to identify and nominate experts from within their countries. I suggest that the IPCC should look further at seeking parallel nomination processes which ensure that existing high quality experts are nominated even from countries in which the IPCC Focal Points are insufficiently proactive, as well as putting further effort into “education” of country focal points about nomination processes.

2d. Writing of working group reports

The fact that the writing of the report chapters (and the responsibility for the quality of the chapters) rests with the expert authors who are selected on the basis of their expertise is a very great strength of the IPCC process, which must not be diluted. This ensures that the knowledge assessments are based on a sound expert and scientific process, and are not influenced by political considerations, and is the basis for the authority of the IPCC products.

2e. Review processes

In principle I think the IPCC review processes are good. However in practice experience with the Fourth Assessment showed that some errors (e.g. the statement about potential rate of loss of Himalayan glaciers in the Asia chapter of WG2) were not picked up through the review process. I suggest that the Working Group Bureaus and TSUs should put further effort into assuring that

for each of the report chapters appropriate experts are invited to provide review comment. For example this would have included ensuring experts on glaciology provided review comments on the appropriate parts of the WG2 Asia chapter. I also think that Coordinating Lead Authors and Review Editors should be encouraged to take an even stronger responsibility for ensuring the material in their chapters is well-sourced and robust.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

This was challenging for the Fourth Assessment, because of the very tight time-scales involved. The fact that a longer elapsed time is being provided for Synthesis Report preparation should be an improvement for the Fifth assessment. A great strength of the process is that material in the Synthesis report must be grounded on Working Group assessments. However I feel that some of the previous Synthesis Reports have been rather weak in true synthesis across findings from the individual Working Groups.

2g. Adoption of report by the IPCC plenary

I think the current process where the report SPMs are subject to line-by-line agreement from a Plenary meeting of country representatives, but nothing can be included in them which does not come out of the underlying Working Group Report and the wording must be agreed to by writer representatives from the appropriate chapter is a great strength. This means that countries do “take ownership” of the report findings, while the reports also retain scientific credibility. However there is room for some improvement in the way some of the Working Group plenary meetings to finalise and approve the Summaries for Policymakers and accept the Working Group Reports are run. For example the chairing of the entire WG2 plenary for the Fourth Assessment by just one individual – including a final mammoth 24-hour plus session - was not very effective.

2h. Preparation of any special reports

I’ve no specific comments about this – many of my comments above about the Working Group Reports for the full assessments also apply to the preparation of Special Reports.

3. What is your opinion on the way in which the full range of scientific views is handled?

I’ll comment here on WGI, which is where most of my experience related to this lies. I think this was done pretty well by the WG1 chapter author teams for the Fourth Assessment, including by the way in which they considered the review comments. It is important to note however that only scientific views for which there is a good research and literature background should be incorporated into the assessment process – not unfounded (and often unscientific) views promoted only in blogs and the media.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I think the level of involvement of government representatives is about right. I’ve commented in previous questions about the strengths of involving both subject experts and government

representatives in the scoping process, and in the approval of the Summaries for Policymakers – and also on the strength of using subject experts to write the Working Group assessment chapters and giving them the responsibility for the chapter quality.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

It is important to base the assessment on peer-reviewed literature wherever that is available. However, particularly from some WG2 and WG3 topics, and for some Special Report topics, it is necessary to draw on the grey literature, to capture (for example) engineering knowledge, or information from regions for which there is little journal-published literature. In these cases lead authors should be very discerning about the selection of the grey literature and Convening Lead Authors and Review Editors should also take some responsibility for ensuring assessed grey literature comes from reputable sources. Finally, I suggest that for findings to be drawn through to the Executive Summary of individual chapters and/or to the Summaries for Policymakers, they should preferably be based on several independent studies and groups of authors, and preferably on peer-reviewed material.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

A strength of the Fourth Assessment was the use of clearly defined terms to express uncertainty and / or levels of confidence. It is vital that all chapter authors adhere to guideline material on these matters.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

If by “data” you mean the information which is quoted and assessed in the Working Group Chapters I think performance has been mixed. In principle, the review processes, and the responsibility of Review Editors to ensure lead authors seriously consider all of the review comments should be an excellent safeguard – but as discussed earlier some mistakes did get through this process in the Fourth Assessment. Thus I think the importance of following the IPCC rules for this should be emphasized strongly to lead authors and review editors at the beginning of the Fifth Assessment. As noted earlier, it is also important that Bureaus and TSUs work hard to ensure that experts with an appropriate range of expertise are sought to undertake reviews of individual chapters.

I think that issues which have arisen over the past nine months have shown that IPCC processes for dealing with errors discovered after publication were inadequate – too slow, and insufficiently transparent. However I believe the process is improving

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

This is a vexed question. I do wish to emphasize that the authority of the IPCC rests with its careful assessment process involving work by expert authors, several rounds of review, and approval or acceptance at plenary level. Any statements or products regarding climate change science / knowledge coming out of the IPCC should have been developed through such a robust assessment and review process – for example it is important that simplified (or “dumbed-down”) scientific messages or explanations developed by media people without the usual IPCC level of science input and peer review should not be put out as IPCC products.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

It is a huge effort involving many people but given its success overall for the past four assessment cycles I do not favour radical redesign or restructuring – I’d look rather at improving the present process in areas where that is needed (some of these are identified in my earlier answers).

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

No – not at this stage (I’m getting tired!).

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Coordinating lead author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

For comments on most of these issues see below.

3. What is your opinion on the way in which the full range of scientific views is handled?

The IPCC has always made great efforts to present data and results as well-balanced as possible. Biased reporting is definitely not one of the shortcomings of the IPCC assessment process.

However, inter-working-group reviewing could give the reports an even greater balance (see also question 7).

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Currently, the IPCC represents a mingling of political and scientific processes. Clearly separating the roles of governments and science is one of the most important aspects of reform. The scientific assessment should be conducted by scientific bodies alone, preferably supervised and coordinated by the Inter Academy Council rather than the World Meteorological Organization. Authors should be nominated by the Academies solely based on criteria of scientific excellence.

Interaction with governments should consist of a structured dialogue, in which the two communicating entities remain well-defined and independent. Governments should clearly define their needs by scoping and identification of key questions and issues. Assessments and special reports in response to these policy needs should then be prepared and finalized by the IPCC in full independence. This means, inter alia, that the bazaar-like plenary meetings, in which the summary for policymakers is agreed upon, ought to be abolished. Political ownership could be created, instead, by, e.g., institutionalizing hearings and debates on IPCC reports in parliaments and ministerial cabinets.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Frankly spoken, non-peer-reviewed literature should no longer be a valid source for IPCC assessments. At the same time, IPCC authors should be more strongly encouraged to undertake innovative synthesis of peer-reviewed literature. As an exception, well-established data bases of public institutions should be treated as acceptable sources.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

It is not exaggerated to say that the last IPCC assessment report reflects an “obsession” with uncertainty. In places the substance is merely buried under uncertainty estimates. I would recommend omitting issues of strong uncertainty instead of lengthy speculations and discussions included only for the sake of comprehensiveness. Knowledge gaps should be made more explicit.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Improved quality control could be established by cross-reviewing among working groups. A better structured review process that ensures consistency among the main findings of the three working groups is essential.

Dealing with errors identified after publication needs to be institutionalized. Submissions to the IPCC pointing to errors need to be treated as transparently as possible. Errata should to be easily accessible and preferably available on the main download sites of the reports.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

When the error on the Himalaya glaciers was first revealed the IPCC reacted extremely slowly and in an insufficient manner. This clearly demonstrates the enormous room for improvement of communication with the media and general public. Once more communication strategies of the Academies of Sciences can be a guidepost for improvement. Most importantly, the IPCC's role of an "honest broker" (including the scrutinizing review processes involved) needs to be better conveyed to the public.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The German Advisory Council on Global Change (WBGU) may serve as an example of how to better structure the interaction and to ensure the independence of science and politics.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

See above, I recommend affiliating the IPCC secretariat with the IAC instead of WMO.

Also, structures for decision-making within the bureau could be rendered more transparent. In particular, the responsibilities and roles of the IPCC Chair, the secretariat and the Working Group Co-Chairs should be more clearly defined. The organizational structure should better reflect the Co-Chairs' scientific expertise and involvement in the making of the assessment reports, as opposed to the more general and comprehensive responsibilities of the IPCC Chair.

The nomination and election procedure of the IPCC Chair currently also lacks transparency. Priority criterion for selecting/electing the Chair ought to be outstanding contributions to climate change research.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Coordinating Lead Author, Lead Author (Technical Summary, Summary for Policymakers)

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

I have no particular views on this

2b. Election of Bureau, including Working Group chairs

I have no particular views on this

2c. Selection of lead authors

This process has some limitations given by the nature of the IPCC as an intergovernmental body. The need to have a geographical balance enforces to select some authors, mostly from developing countries, which do not have the necessary expertise. However, the procedures allow for identification of additional lead authors by the team even after the work has commenced. This, along with the selection of contributing authors, ensures having all the necessary expertise on board.

2d. Writing of working group reports

The task of writing the reports is generally very well organized. One problem that deserves attention is the existence of big differences among authors in achieving the quantity and quality of work allocated to them. Some authors do not deliver any work at all, or their work is untimely and/or of poor quality. This results in a high burden on the rest of the team.

There are some factors that contribute to this variability. One is the personal attitude of the authors, some of which tend to do very little work. Another is the lack of access to all the relevant literature, particularly by authors coming from developing countries.

2e. Review processes

This is one of the main strengths of the IPCC assessments. I have no suggestions for further improvements, although from an author's point of view, it would be desirable to have fewer comments to deal with (perhaps it would help to have some screening by the Secretariat of those comments which are clearly not relevant).

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

This process is too influenced by political considerations. In my experience, these documents tend to be somewhat biased and do not reflect the substance of the chapters.

2g. Adoption of report by the IPCC plenary

My response to item f above also applies here.

2h. Preparation of any special reports

I have been involved in one special report (Climate Change and Water). My main problem was

the constraints to use literature not cited in previous IPCC reports that had been adopted by the plenary.

Special reports do not receive as much attention as assessments or as GHG inventory guidelines.

3. What is your opinion on the way in which the full range of scientific views is handled?

The process ensures that all views are considered. One problem related to the selection of authors is the fact that in some occasions the views are not strictly scientific or technical, but are tainted by political or ideological views. It is known that environmental NGO activists lacking the necessary scientific expertise are sometimes infiltrated into the process. And it is also evident that some countries nominate authors which do not act independently but follow an agenda defined by their governments. This is difficult to handle, but perhaps a stricter selection process would be necessary.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The summaries for policymakers are, unfortunately, the most visible documents of the assessments. And, due to the fact that these documents must be approved by governments on a line by line basis, which means that compromises need to be reached between the frequently diverging views or interests, the summaries for policymakers do not reflect the real outcomes of the assessments.

The role of governments should be limited to setting the agenda of issues with political relevance. Also, governments generally provide useful comments during the process (as well as too many useless ones), and this is an important role. But I believe that the procedure of approval of a summary for policymakers, in the way it is today, should be revised.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Authors should have the capacity to sort out the relevant literature, and I believe there are no major problems in this process. In my case, the main problem is having access to the literature. In most developing countries, literature is not readily available because of the cost of subscriptions. Perhaps the IPCC should consider providing full access to the literature to all lead authors.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

AR4 introduced positive changes to the characterization of uncertainties, and this should be part of a continuous improvement process. In spite of those changes, the report has been criticized for not conveying clear messages to policymakers, which are the ultimate targets of the reports. I believe that IPCC should continue with the current framework for uncertainties and also consider

contributions such as the one by Swart et al. (Climatic Change 92:1-2, 2009) to keep with the efforts to improve its political relevance.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I have no particular comments.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The IPCC has a very small secretariat, and perhaps it should continue to be like that. However, considering that a main goal of IPCC is to be politically relevant, communication with the public should be given more importance and professionalism. During the presentation of AR4 WG3 report in Bangkok I experienced the consequences of a serious lack of organization in the interviews with the media, because the IPCC person in charge just was not fit for the job. More importantly, the handling of issues like the leaked emails or the melting of the Himalayas was very unfortunate and seriously damaged the reputation of the IPCC. I do not know the details very much, but perhaps having a professional communications structure would have helped to neutralize the negative impacts.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The assessment model is OK. It needs to evolve continuously, but there is no need to change the framework very much.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

No further suggestions on this.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Participant in plenary sessions for the adoption of reports, Review Editor, expert reviewer

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Strength: At least for WGI, the questions are essentially science-driven.

2b. Election of Bureau, including Working Group chairs

No great visibility for me, but I am not involved in the process.

2c. Selection of lead authors

Strength: the selection is on the basis of scientific excellence on the relevant topics.

Weakness: as in any selection process, known scientists from the selection committee members cannot be considered exactly as scientists only known through their CV (the best being that they are known)

2d. Writing of working group reports

Strength: 3 different versions of the reports that are reviewed at each step

Weakness: it seems that there is a lack of interaction between authors/expert reviewers of the different WG reports, but that should be improved with a longer delay between the publication of the different reports for the AR5.

Suggestion: at each step of the review, include a few reviewers non-expert of a specific chapter /report but expert of related topics for this chapter/report when relevant.

2e. Review processes

Strength: selection of reviewers according to their expertise on climate change issues.

Weakness: the definition of governmental expert may vary from one country to another. I wonder if their role is clearly defined or understood.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Weakness: the added value of the synthesis report is unclear when each chapter has its own summary for policy makers and technical summary.

2g. Adoption of report by the IPCC plenary

Strength: make the whole process and science-based conclusion to be appropriated by the governments.

Weakness: the link between the SPM and the content of the report might be occasionally distended after discussion.

Suggestion: help the authors to keep the link with the scientific content of the report through some review edition of the SPM (review editors with the role to check the exact consistency between the SPM and the report content, including its technical summary)

2h. Preparation of any special reports

Strength: help at filling the gap between successive reports on topics for which there is new scientific knowledge.

Weakness: risk of a lot of redundancy with what is published in the assessment reports.

Suggestion: more focussed topics avoiding redundancies.

3. What is your opinion on the way in which the full range of scientific views is handled?

The full range of scientific views is generally well handled in the report keeping in mind that the different views must be published in peer-review literature.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Their role should be to endorse the process and to appropriate the science-driven conclusions. Opinion expression and political decisions are not to my sense part of the process. They should be involved in the review of the report as they are in order to avoid some question to be only discussed at the plenary with less scientific support from the whole ensemble of authors.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

For WGI at least, there is no strong reason to include results from papers that are not published in "peer-reviewed" literature. Original sources should be preferred compared to review papers. The original work from the authors of the chapters should be only in to synthesize.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The effort to share a common language on uncertainties across the different reports and chapter should be pursued. Significant progress has been done from one report to the next one. One difficulty is to account for controversial issues that should be reflected in the uncertainty language (As it seems to me they are), but should also have some specific treatment in the summaries.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The difficulty in handling data is often misunderstood. Perfect data are no more existing than perfect models. This implies that some consideration on data quality should be included in the report in due place referring to existing literature (this is often the case but there is perhaps no so

much new literature on the subject and some questions on data control are not necessarily revisited from one report to another; this implies that in this case some reference to previous reports should be made). Concerning errors, they must be published as soon as they are known with a comment from authors or editors. The IPCC web site seems the easiest way to do this in order to be as reactive as possible. The role of review editors in checking the reports should be emphasized in the review process.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

This seems satisfactory as far as it remains limited to scientific expertise.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

This model if not perfect remains an example that could be followed for other key scientific questions that need to be assessed regularly to help the decision of stake-holders and to inform the public. For instance, there is no similar sustained process for general issues of Environment and health and this is a pity (it often remains at a national or european level for these issues). The same effort could also be done for sustainable resources ...

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

This seems to work well from an user point of view.

11. Any other comments

Controversial issues should have some specific treatment for example through the "Frequently Asked Question" part of the report. In this case, new findings since the previous report are not always sufficient to give a clear view of the state of the art. Some synthesis based on the accumulated knowledge at that time might also be necessary.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

CLA, IPCC Bureau member

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

I see the open consultation with governments to fix objectives and policy questions as strength.

The participation of governments and scientist in the scoping meeting(s) is also strength. However, the procedures for participating each of the groups in the scoping process and the role of each of the groups needs to be improved. The scoping procedure must be based on a two way dialog between government representatives and authors. The results of the scoping meetings must have some flexibility to allow accommodating changes as the development of the assessment proceeds, should these be needed.

2b. Election of Bureau, including Working Group chairs

I see no problem in the election. I do see a problem in the election of the Co-Chair persons since it implies a burden that not all countries can support. See my point below about the need of setting a permanent structure and of decoupling TSU and co-chair persons.

2c. Selection of lead authors

I see no major problem as it has been done this time around. Selections should be based upon the demonstrated skills and CV of the candidates.

2d. Writing of working group reports

Authors should be provided with clear guidelines about rules and procedures, handling of uncertainties, use of literature, etc. Examples that clarify possible conflicts would be very helpful. Permanent support from the TSU's for in case doubts arise should be strengthened. Support with the literature is a must. All participating authors should have granted access to the literature they wish to review. This is not always the case. Therefore, provisions should be made, or support given, so that the assessment does not suffer from the inability of being able to read the literature.

2e. Review processes

The review procedure should be strengthened. To start with, experts should be chosen taking into consideration the expertise needed for the various sections of a given chapter. Tracking of who revised what based on its expertise should be made so that no section goes through review without having at least one reviewer that is competent on the subject it deals with. Consequently, each chapter should identify before hand the type of expertise required an appropriate review, and make sure that such experts will be engaged. Critical pieces of each chapter, particularly when they carry messages to the main conclusions, should specifically have been reviewed by someone competent in the subject matter.

Critical in this process is that all cited documents are available through the IPCC portal to all authors and reviewers across working groups. One cannot assume that authors and reviewers have access to that information. That is often not the case.

Review editors must be more deeply involved in the process. Whenever conflicts emerge because of diverging interpretations, these cases should be highlighted and brought to the consideration of the respective WGs bureau to make sure that all principles and procedures are

correctly followed. This is particularly important when it affects the main conclusions of the reports.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

There is a clear need to strengthen the linkages between the various WGs and the drafting group of the Synthesis report to insure that a true synthesis is possible and not a mere collation of different pieces of information emerging from the various WGs. The development of its outline, early on in the process, and the identification of the main policy relevant questions and objectives is a must. Additionally, an enlargement of the drafting team with a greater involvement of the CLAs of each of the chapters of the WGs could insure a better synthesis and integration. At a minimum, the synthesis report should be discussed with a (large, full) representation of all CLAs to make sure that all major elements of the synthesis and integration are carried forward.

2g. Adoption of report by the IPCC plenary

Drafting in plenary should be limited to the very minimum. Government representatives in plenary should engage themselves in discussing primarily, and above all, written comments sent by them based on the last version of the reports. Raising new issues not considered in writing should be minimized unless they refer to flaws, inconsistencies, etc.

2h. Preparation of any special reports

Special reports should be limited in number and clearly defined within a strategic framework.

3. What is your opinion on the way in which the full range of scientific views is handled?

In my opinion, all scientific views that are consistent with scientific evidence have been duly considered during the AR4. In order to continue guaranteeing that this is taken into consideration, further guidelines should be provided to the authors of the AR5, so that they can identify possible situations of conflict. These guidelines should set procedures to allow them to make informed decisions and reflect them in their assessment whenever conflicts arise.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments are the first end-users of the reports. Therefore they must clearly set the goals and objectives of the assessments, and identify the policy relevant questions that these need to address. The outlines of the assessments should be specific enough so that the drafting teams can proceed, but should not be strict, and allow authors and the bureaus certain flexibility to accommodate inconsistencies, conflicts between subjects and, eventually, new scientific developments as the assessment proceeds. So it is important to let some flexibility, with appropriate principles to decide on them, to deal with conflicts as they arise.

Governments should continue providing support for the identification of authors and reviewers.

Finally, governments should strengthen the review process, particularly all components of a report that deal more specifically with regional aspects. The review process by the governments is not a matter of number but of the right types of expertise for the specific sections of a report. Governments should mobilize their scientific community to make sure that the right combination of experts is able to read the documents.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

In my view, the important point in IPCC assessment is that it is based on scientific information and data that has the best quality, no matter where it comes from. Peer review papers before being published have a quality assurance procedure. Nevertheless, errors also exist. Papers from scientific journals are every now and then withdrawn, are subject to corrections or rebutted. Yet, they should be the first and main source of information. But there are vast amounts of information and data that are not published in scientific papers, some of which is also reviewed as strongly as peer-review papers, and without which the assessments of the IPCC would not be possible. Adaptation, much of which is done autonomously, or by agencies of all sorts, may never be published, and yet it is critical for a correct assessment. My recommendation is that the current guidelines of the IPCC be strictly followed and that a full consideration to all relevant literature be given. Authors, when using a certain piece of information and data, should insure of its quality. Procedures should be set up for those cases when doubts arise, and records should be kept of why certain pieces of information, that are presumed or known not to have undergone any quality assurance process, were used assuming that it was the best and only source of information available. In addition, see later, all pieces of information should be available for the authors and reviewers.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Authors should be provided with clear guidelines, common to all WGs and reports, for treating and reporting uncertainties. A list of examples across the various WGs should help authors identify possible conflicts in detecting and reporting the various types of uncertainties.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Quality assurance: the expert judgment of the authors must decide whether she/he thinks that the information being used is trustworthy. As mentioned above, clear guidelines should be provided to the authors for using the various sources in their reports and, when it is unclear whether a procedure for quality assurance was in place, to report it by justifying the reasons behind the use of such material. Additionally, ALL sources of information used SHOULD BE AVAILABLE to the authors and reviewers. IPCC should have readily available a pdf copy of all texts used in the report and provide access to the authors of all groups and the reviewers to insure that everyone involved in the process has had the opportunity to read these documents if so wished. Assuming that the information is freely available to the authors and reviewers is not acceptable, because it

is not true for many. IPCC must insure that all participating in the assessment process can read the documents that support the messages that arise from its reports without any restriction.

Errors: IPCC should set up a procedure, including, when appropriate, the corresponding structure(s) to deal with errors. A differentiation should be made between minor, factual errors and those that might have some implication for the conclusions of the reports. In the first case, a procedure should be set up so that it would be quickly resolved using the normal structures. In the second case, a procedure should be established to deal with the amendment whereby by an external group should be charged of leading the processes to amend errors. Amendments should follow the normal rules of IPCC, including approval by plenary. A written procedure could be established to expedite the resolution of the case.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

IPCC should make every effort to communicate to the public what is doing, how and when during the preparation or drafting of its reports. On a normal basis, IPCC main news will arise when its reports are approved, and the main information efforts should be aimed at conveying what these reports contain. Other than that, IPCC should hardly produce news of relevance. Therefore, the main efforts should be placed on communicating the results of the reports.

In addition, whenever errors appear and call the attention of the media, IPCC should set a procedure to clearly acknowledge that alleged errors have been noted and that a procedure is in place to deal with them within a specified time-frame. Detailed information as to how, when and by whom this is being handled and an expected time for reaching a conclusion should be provided.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

IPCC should be given a more solid and permanent structure within the UN system. Consequently, the TSUs should be stable, as it is the Secretariat. This would insure that the expertise and documental base remains as part of the UN system. Co-Chair persons should be elected openly, independently of the TSU's. IPCC should cover the expenses of all participating in the process (chair-persons, co-chair persons, authors, reviewers). Funding of delegates participation to plenary or other meetings should continue unchanged. A review of its finances to insure working on this new mode should be made and be ready for after completion of the AR5.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

See comment above. A permanent secretariat and support units, with its staff, should be more deeply involved in the process of quality control of the reports.

11. Any other comments

IPCC reports are most valuable for the governance of the World. Insuring that it continues working with the best standards it requires a more solid and permanent structure within the UN system.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Coordinating Lead Author, Core Writing Team Member of the Synthesis Report. Also Coordinating Lead Author, Lead author for Special Reports

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

So far I have attended one scoping meeting. I found the meeting very productive.

2b. Election of Bureau, including Working Group chairs

I had no role so far in this process

2c. Selection of lead authors

I had no role so far in this process. I have only been notified each time after the selection.

2d. Writing of working group reports

I find the writing process ok but there should more integration among the three working groups especially regarding cross-cutting issues. My suggestions are below:

The Bureau Meeting that approves outlines of the Reports can identify the important cross-cutting issues. Experts from three Working Groups can be invited to identify them.

In the first lead authors' meeting of each working group, a small group of experts can be formed to look into the issues. Representatives from the other two working groups should also be in the 'expert group on cross-cutting issues'. Role (s) of the review editors can be expanded to oversee these or member (s) from the respective Working Group Bureau can oversee the integration process.

2e. Review processes

The review process generally takes place in three stages: expert review of IPCC Reports, government/expert review of IPCC Reports, government review of the Summaries for Policymakers, Overview Chapters and/or the Synthesis Report. Positions for Review Editors

created during the Third Assessment Report. In my view it has been very constructive and productive. However, I suggest following three for the improvement of the review process

The first order draft should also go to the governments.

Review editors should be invited from the zero order drafting meeting instead of first order drafting meeting. This will give them an insight of the process.

the review editors should also go through the drafts and pass on their own comments.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

I find the process OK.

2g. Adoption of report by the IPCC plenary

The process in place worked well in the plenary meetings I have attended.

2h. Preparation of any special reports

I only played roles of an author. The preparation process is similar to the main reports.

3. What is your opinion on the way in which the full range of scientific views is handled?

I am satisfied with the process.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Caution should be exercised in cases of uses of non-peer reviewed literatures. Data presented in those literatures should be carefully checked and only be used if the topic is important but no peer reviewed literature is available.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I am satisfied with the handling of the uncertainties in the reports

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

8. What is your view of how IPCC communicates with the media and general public, and

suggestions for improving it?

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

No

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

It is an intergovernmental process. So I do not have any comments on this.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Government Focal Point, head of country delegation

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Consultation with governments on the scoping and identification of policy questions and themes is an important step in ensuring the relevance of an IPCC report to government policy makers. When consulted on the scope of an IPCC report, I remain satisfied that the input I provide on behalf of my government is adequately considered and often reflected in the final outlines of IPCC reports. The final approval of outlines by the IPCC Plenary provides an additional opportunity for governments to influence the design of an IPCC report.

2b. Election of Bureau, including Working Group chairs

I had some small concerns related to the transparency of the election process for the Bureau of the AR5 cycle. During this election, three qualified candidates from developed countries were nominated for the position of WG I Co-Chair. Prior to the election, there was some pressure for candidates to consider withdrawing their nomination in order to avoid a formal vote for this position - it was speculated that a lack of strong consensus for one candidate could potentially be divisive to the work of the IPCC. However, when it was certain that a formal vote would be needed, the candidates were provided with opportunities to present themselves and answer questions from the Plenary so that members could make an informed choice. In this way, the vote ultimately served to increase the rigor by which the Co-Chair of WGI was elected.

During the same election, there was also an incident in which the IPCC's election procedures were misinterpreted during the election of a WG III Co-Chair. This misinterpretation resulted in the appointment of three WG III Co-Chairs and ultimately led to a decision to increase the total

number of Bureau members to 31 for the duration of the AR5 cycle. However, if accurately followed, the current election procedures would have prevented this situation.

2c. Selection of lead authors

My role as a Focal Point is to nominate candidates for positions in IPCC reports, but I do not play a role in the selections themselves. The selections are made by the WG Bureaus and approved by the full IPCC Bureau based on the selection criteria outlined in the procedures for the preparation of IPCC reports. During the recent selection of lead authors and review editors for the AR5, all WGs applied these criteria and were successful in achieving an appropriate balance based on available nominations. However, the selection process could be further strengthened by increasing the consistency across WGs in the methods used to review and assess nominated candidates.

2d. Writing of working group reports

I have not been involved in this stage of the assessment process and cannot comment on it.

2e. Review processes

The IPCC review process is currently very rigorous, involving two formal stages of review that are overseen by review editors. However, the process could be strengthened by increasing its openness and inclusivity. It is recommended that the IPCC implement a system in which any individual can register as an expert reviewer and provide comments on a draft IPCC report. An open review process would increase the transparency of the IPCC's handling of the full range of scientific views and would provide greater opportunities for experts not selected for author or review editor positions to become involved in the IPCC process. Key challenges for the IPCC in facilitating an open review include: verification of the credentials of reviewers and the potential for organized efforts to derail the IPCC review process; ensuring that draft reports distributed for review are not publicly cited or portrayed as having received the final approval of the IPCC Plenary; higher workload for authors, review editors and the IPCC TSUs/Secretariat.

As the writing process for the AR5 commences, it is also timely to re-emphasize the importance of the role of the review editor and ensure that the responsibilities of the review editor are clearly communicated. It is recommended that review editors increase their collective interaction to ensure that review processes are consistent across chapters and WGs, particularly in common areas of sensitivity, such as the proper handling the full range of scientific views and the appropriate use of non-published/non-peer reviewed literature.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

The input of governments in the development of the SYR outline is important in ensuring the utility of this document for policy makers.

The IPCC Bureau recently agreed to solicit comments from governments this summer on the SYR outline. The IPCC Plenary will also approve the final version of the outline at the upcoming

32nd Session of the IPCC.

To successfully integrate and synergize WG contributions within the SYR, increased interaction and feedback between the WGs and the authors of the SYR is needed. The IPCC has taken an important first step in facilitating this interaction by deciding to begin the development of the SYR earlier in the AR5 assessment process.

2g. Adoption of report by the IPCC plenary

I participated in the adoption and approval of the IPCC AR4. In general, I found that this process is effective in achieving consensus and acceptance among governments on the conclusions the scientific assessment process. During the approval of the AR4 there were instances in which authors of IPCC reports were also members of their national delegations and would take the floor to advocate for or against scientific elements of the assessment that they contributed to. In my view, these dual roles represent conflicting interests in the IPCC process. It is recommended that the IPCC develop a code of ethics applicable to Bureau members, authors, review editors, expert reviewers, and the IPCC Secretariat that would provide guidance on managing real or potential conflicts of interest.

2h. Preparation of any special reports

Responses throughout this questionnaire also apply to the preparation of special reports.

3. What is your opinion on the way in which the full range of scientific views is handled?

As described under 2e, the review process of the IPCC is the key step in ensuring proper handling of the full range of scientific views. Increasing the openness of the review process will provide opportunities for individuals from a full range of disciplines to contribute to the development of a report. The review process requires that authors of the report respond to all comments in writing. The comments and the responses are publicly available.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments are the primary supporters and users of the work of the IPCC. Besides the provision of funding support and general oversight of the management of the IPCC, governments engage in four stages of the development of IPCC assessment reports: scoping, nomination of experts, review and approval. Engagement of governments in these stages ensures that the report is relevant to policy makers and promotes a wide consensus and acceptance among governments on the state of climate change based on scientific assessment. The separation of governments from the writing and editing stages of a report ensures that the assessment itself is independent and scientifically-based.

The "Focal Point" model used by the IPCC to engage with governments has proven to be an effective mechanism in coordinating government input to the IPCC process. Focal Points could be better engaged and kept up to date in the management of the IPCC through greater and more

timely flow of information from the Secretariat.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Decisions regarding the use of data and literature in an IPCC assessment are largely at the discretion of IPCC authors and review editors. This underscores the importance of a rigorous nomination and selection process for these positions, as well as a thorough and open review process. Although IPCC procedures provide direction on the referencing of non-published/non-peer reviewed literature, more detailed guidance could be provided to authors and review editors on criteria for assessing the quality and validity of such literature and the appropriateness of its inclusion in an IPCC report.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The characterization of uncertainty in IPCC reports is best determined by scientific experts and I am not able to comment on this issue. The IPCC has identified the need to ensure consistency in the evaluation of uncertainty and risk across WGs and is taking steps to increase cross-WG coordination on this issue in the AR5.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The IPCC does not produce primary data and the issue of data quality assurance and control is largely outside its purview. The issue of the use of data sources and literature in IPCC assessments is covered under question 5.

The identification and rectification of errors is an important part of the scientific process. The IPCC has experience correcting small technical errors after publication using the errata pages on its website. However, there is currently no formal procedure in place for assessing and correcting more significant technical or judgment-based errors in IPCC reports. The development of such a procedure is recommended. At its 41st Session, the IPCC Bureau adopted a preliminary procedure that can be used to assess allegations of errors and, when needed, establish a small committee to recommend how to resolve the error. The correction of more significant errors after a report has been published should ultimately be approved by the IPCC Plenary.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The IPCC has not focused significant attention or resources on media outreach and its reaction to increasing public interest in the work of the IPCC has generally been slow. The development of a communications approach that ensures timely responses to questions about the IPCC would be welcome. However, in order to maintain the credibility of the IPCC, it is important that communications remain scientifically-based, policy neutral and focused on the work of the

IPCC. It is recommended that the IPCC more fully utilize its network of scientific experts and government Focal Points to assist in communicating information on the IPCC's procedures and activities.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The IPCC has proven to be an effective and sustainable model to achieve wide consensus and acceptance among governments on the current state of climate change based on scientific assessment. Governments continue to recognize the IPCC AR4 as the most reliable and comprehensive source of information on climate change and interest among scientists to participate in the IPCC remains high. With each assessment cycle, the IPCC renews itself and makes adjustments in its practices in order to continue meeting the needs of its members. However, I am not aware of largely different models that would be more effective at managing the complexities of the science of climate change and navigating the sensitive dynamics between science and policy at a global scale.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Increased coordination among the IPCC Secretariat and the WG TSUs is needed to ensure that management processes are consistent.

11. Any other comments

Based on my government's experience in participating in the recent 41st Session of the IPCC Bureau, it is recommended that the IAC review the role of government representatives that are permitted to accompany the Bureau members to meetings. Currently, Bureau meetings are managed in a way that allows government representatives to take the floor to provide input on Bureau decisions. Unlike the Bureau members, government representatives are not elected by the IPCC Plenary and their active participation in Bureau meetings may afford some governments a disproportionate opportunity to influence the decisions of the IPCC. The development of terms of reference for the Bureau and its operations, in conjunction with a code of ethics for participants in the IPCC process (as recommended in question 2g), may help to resolve this issue.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Government Focal Point, participant in IPCC sessions and plenary meetings where reports have been approved

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

No problems. The process is quite exhaustive.

2b. Election of Bureau, including Working Group chairs

This is a quite transparent process.

2c. Selection of lead authors

Quite transparent as well.

2d. Writing of working group reports

No comment.

2e. Review processes

Quite exhaustive. The government review is very useful.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

No comment.

2g. Adoption of report by the IPCC plenary

This process is also exhaustive. Going line by line in adopting the reports is useful.

2h. Preparation of any special reports

The consultations before the report is started are useful. There is ample time given before the preparation of reports starts.

3. What is your opinion on the way in which the full range of scientific views is handled?

There is a lot of involvement by scientists the world over representing government and the academia. This is necessary to get unbiased views.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments identify scientists for the process especially in developing countries where a lot of scientists are in the public sector as opposed to academia. Involving governments also gives them ownership of the reports.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

There is need for more search for literature especially in regions like Africa where there are few climate scientists. Scientists in such regions should be encouraged to do climate change research by assisting them with funding. This will fill in the gaps in the data.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Not sure.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I have no ideas what goes on.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The media communication that the IPCC chairman does is very good. I believe Prof. Pachauri personally has done a good job in communicating with the public and the media.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

No comments.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

No.

11. Any other comments

The involvement of all governments can not be over-emphasized. This is a wonderful model. It gives credibility to any reports produced.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

IPCC Bureau Member

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Scoping and identification of policy questions has been problematic. The reason for this is that the member governments (who are the ones to receive the output of the IPCC) were unable to agree on the formulation of such policy questions, nor were the Parties to the UNFCCC. Policy questions were therefore not explicitly formulated as part of the IPCC writing process. In the process of composing the Summary for Policy Makers the key messages were formulated to respond to policy questions the authors perceived to be the most important. Through the review process of the SPM and the final approval of the SPM governments had their say in shaping this SPM to address their (unspecified) questions. It would be an improvement if a process could be agreed to consult users in the policy and decision making community to get a more precise idea about the major questions.

2b. Election of Bureau, including Working Group chairs

For the election of the IPCC chair there are no explicit selection criteria set. Respectable scientific credentials are required. Other aspects such as personality and maintaining regional balance over time are also applied.

In the election of the Working Group co-chairs there are also no explicit selection criteria. Proper weight is placed on scientific expertise in the respective field of the working groups, next to other criteria such as management capability and regional balance. The selection is limited by the requirement that the candidate co-chairs host developed country takes the responsibility for funding the Working Group secretariats (Technical Support Units-TSUs).

For IPCC vice chairs and Working Group vice chairs there are also no explicit criteria. Scientific expertise is a requirement, but regional balance is the dominant criterion.

This process could be improved by adopting agreed selection criteria, such as scientific credentials, experience, availability for the IPCC work and independence. The use of a search committee for identifying candidates for the position of IPCC Chair could broaden the range of available candidates. Moving towards funding the Working Group TSU's through the IPCC budget (see question 10) would allow to broaden the list of candidates from developed countries for the co-chairs position. Equally, providing payment to (developing country) co-chairs would also broaden the list of qualified candidates.

2c. Selection of lead authors

The selection of lead authors starts with a wide nomination process by government and international institutions. The Working Group Bureaus can add nominees to this list if particular expertise, certain background expertise (e.g. private sector) or regional coverage is missing. CV's of all candidates are available. The selection process is performed by the Working Group Bureaus, supported by their secretariats (Technical Support Units-TSUs).

Selection criteria are scientific standing, required fields of expertise, spread in “schools of thought” in the respective discipline, regional balance and good mix of background experience (academic, private sector, public service, civil society). Selecting the chapter author teams is a difficult process, because the number of potential candidates is large, nominations are not always made for the appropriate chapter and many of the nominees are not known personally by the Working Group Bureau of the TSU. This process could be strengthened if advice from non-nominated experts in the field with more specific knowledge about candidate authors could be organized during this selection stage.

2d. Writing of working group reports

Generally speaking the writing process is working well and authors show the utmost dedication and cooperative spirit to delivering a quality text. Points of attention in the writing process are the following:

- *Not all authors are delivering their contributions in time and at the required quality level.* This can be caused by overcommitment by other work (IPCC work is unpaid), lack of proper resources and access to literature (happens in some developing countries) or because of insufficient quality of the selected author. Overcommitment is difficult to avoid since the aim is to include the best scientist in the field who are generally asked for many other jobs. Paying authors could in theory address this, but this would have enormous consequences for the IPCC budget. Lack of resources and facilities in developing countries could be addressed by making regional facilities available, together with additional travel budget, so that authors could spend some time in a well resourced place to do their writing. Insufficient quality can be avoided through a better selection process (see above)
- *Uncooperative attitudes of authors:* it has happened in a few instances that individual lead authors or coordinating lead authors try to push their own views and try to suppress that of others, based on their strong convictions of what is scientifically valid and what not. This can lead to a bad atmosphere in the team, hindering the writing of a balanced chapter text. For a good assessment process authors should be open to views that are scientifically legitimate and they should reflect those different views in their assessment report. To avoid possible clashes of this nature attention should be paid to this in the author selection process in as far as possible. Other than that it is a task for the Working Group management, in particular the co-chairs, to watch out for such situations in chapters and then intervene.
- *Insufficient cross chapter and cross working group checking.* This is caused by the high workload of chapter authors and the voluntary nature of the work, leading to insufficient time for necessary cross checks. The addition of chapter assistants (young graduates provided with a stipendium) that assist the author teams with their work would be able to free some time of authors to do the necessary cross checking.
- *Authors tend to write too long texts:* there is a tendency of author teams to expand the length of their texts beyond what is appropriate for an assessment process that is set up to assist decision makers. Setting page limits at the very beginning of the process is a well established procedure within IPCC now. However, it is important to keep reminding authors of the ultimate audience of the assessment report, i.e. decision makers in the public and private sector, and to make that guide the way the chapter texts are put together.

2e. Review processes

The review process is one of the strengths of the IPCC process. It involves hundreds of reviewers for each working group report, there are three stages, an internal zero order review with some external reviewers, and two external reviews by independent experts (the second including governments), all review comments have to be addressed by the authors and their response is documented in publicly available files, overview of the handling of the review comments is performed by 2 “referees” (called review editors) per chapter, who have to provide a written declaration that all review comments have been given proper treatment before the report is accepted (without such a declaration the report will not be accepted by the IPCC or Working Group Plenary). In addition IPCC member governments scrutinize the report in the context of approving the Summary for Policy Makers. This review is unprecedented and stronger than any other scientific review process by a wide margin.

There is still room for some improvements however. It happens that some chapters or parts of chapters only receive a limited number of reviews. In fact, it has become more difficult to get enough reviewers to put in the work of reviewing IPCC reports over the years. A recommendation is to actively pursue additional reviewers in cases of insufficient response for a particular chapter or part of a chapter.

Review comments are not made anonymous under current IPCC procedures. This increases the risk authors are not taking some comments serious. This aspect could be improved by making comments anonymous for the authors, as is standard practice for the review of scientific journal papers.

The amount of work for review editors is another issue: sometimes they cannot really cope with the volume of comments and author responses. A recommendation is to increase the number of review editors for larger or more controversial chapters.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

I separate this question into two parts: (1) preparation of the SPM for a WG report, and (2) preparation of the Synthesis report (SYR), because they are very different processes

Ad 1: The preparation of the SPM for a Working Group Report is a very long process. It starts early in the writing process as a way to focus the writing team on what in the end might be the issues that have the biggest policy relevance and what kind of messages that could be given to the decision making community (not prejudging what the full assessment will be of course). In my experience this is a useful learning process making the authors aware of the importance in organising their chapter text in such a way as to focus on the most relevant issues for decision makers.

A draft SPM is put together by the team of coordinating lead authors and co-chairs, in consultation with the other authors. The draft SPM goes out for review at the stage of the second order draft. It is revised by the SPM team on the basis of the comments received, in consultation with the other authors, together with finalizing the report, and subsequently submitted to

governments for final approval. On the draft SPM sent to governments comments and suggested edits are provided by governments ahead of the approval meeting. The team of coordinating lead authors and co-chairs then considers these comments and suggestions ahead of the approval meeting and determines its proposed changes to the text. See the question for the approval process below for the subsequent steps.

The SPM preparation works well and ensures adequate ownership of authors.

Ad 2: The preparation of the SYR starts at a much later stage in the process. During the preparation of the Fourth Assessment report, it was ruled by the IPCC Plenary that the writing could only start after the Working Group reports final drafts were out, so as to avoid the synthesis process driving the Working Group reports. Although the planning stages were completed before that and the organization of the SYR had been agreed upon, it meant that the writing of the SYR became in a number of instances difficult, because the building blocks available in the Working Group reports were not always available in an adequate form. I consider that a weak point. It would be much better to decide early on in the process what the issues/questions will be on which the synthesis report will be focused and what contributions from the different WGs would be needed (without specifying the outcome of the assessment in the WGs of course), so as to enable writing teams of the individual WG reports to ensure that their best assessment of those issues is available in their respective WG reports. Providing a synthesis then becomes a lot easier and better conclusions can be formulated in the SYR. Of course there has to be always room for adding an issue that was not identified early on as relevant for the SYR is the WG reports come up with findings that warrant inclusion in a SYR.

2g. Adoption of report by the IPCC plenary

The adoption of reports by the IPCC or Working group Panels falls into the following categories:

1. Approval of the SPM for a Working group report (by the Working Group Plenary) or of the Synthesis Report (by the IPCC Plenary)
2. Acceptance of the full assessment reports, including their Technical Summaries by the Plenary of one Working Group, a combination of two Working Groups (in case of some Special Reports) or the IPCC Plenary (if a Special Report covers all WGs)

Ad 1: The approval of an SPM or the SPM of a SYR follows similar procedures. As described above for the preparation of the SPM, the author team for the SPM proposes amended texts for the draft that is sent to governments, based on the comments received. Part of these amendments are approved by the plenary, but often government representatives have further suggestions or concerns, which leads to a discussion on how to phrase a particular paragraph or sentence. The chairs of the meeting (i.e the WG co-chairs or the IPCC chair) always carefully check with the attending team of coordinating lead authors if text amendments for the SPM are fully consistent with the underlying text of the chapters. The author team can also alert the plenary to problems in that respect. The rule is that SPM text has to be fully consistent with the underlying text. SPM amendments that change the findings of the underlying chapters are not accepted.

In some instances agreement cannot be found immediately and in that case a contact group is established, led by one of the delegates or the co-chairs, including the relevant coordinating lead

authors, to try and resolve the issue in an off-line discussion. Any amendment has to be approved by the Plenary by consensus (and with the author team agreeing it is consistent with the underlying chapters), but there is the possibility that a delegation accepts a paragraph or sentence to be approved, while requiring a footnote, in which it registers its objections. There are normally only a very small number (if at all) of such footnotes in the SPM text that is finally approved.

This process is very intense, but has always in the end delivered a better text in terms of readability and clarity and a better focus on policy relevant issues. The question has been raised in the past if mixing at the SPM approval stage of scientific assessment work with approval by government representatives is not an unwanted interference in the scientific work. The experience has shown however, that the guarantees for scientific integrity of the SPM (through the veto rule for the authors) are indeed sufficient, while the scrutiny and approval by governments leads to ownership of the SPM by governments, something that makes the SPMs a joint and accepted fact base for taking policy decisions.

Ad 2: The acceptance of the full assessment reports and their Technical Summaries includes the adoption of a list of modifications that have to be made in chapters and/or chapter or technical summary, as a result of agreed formulations in the SPM (in order to avoid confusion about formulations being different in SPM and the rest of the report; these modifications never change the findings of the assessment text). This list of modifications is often adopted at the very end of the meeting, under time pressure. Implementation of these modifications is the responsibility of the co-chairs and the author team. It has happened that modifications have not been listed fully in the decisions made at the approval session and implementation may have not been done fully. This aspect would require more attention and a more transparent process.

2h. Preparation of any special reports

Preparation of a Special Report generally follows the same procedure as a regular assessment report. The only difference lies in the fact that Special Reports may be produced jointly by Working Groups (such as the SR on Land Use Change and Forestry and the SR on Aviation and the Global Atmosphere) or jointly with another body (such as the SR on Global Climate Change and the Ozone Layer that was produced by IPCC WGs I and III together with the Technology and Economics Assessment Panel of the Montreal Protocol). Such joint responsibilities then lead to arrangements on the management of the process. In the case of the report with TEAP this was done in the form of a Steering Committee of the co-chairs of the respective bodies. The other procedures are identical to those for the preparation and approval of regular IPCC reports.

3. What is your opinion on the way in which the full range of scientific views is handled?

Ensuring that the full range of scientific views is covered in the assessment is one of the most important aspects of the process, something that I have always paid a lot of attention to. The review process with large numbers of independent expert reviewers and the rules for handling review comments as well as the oversight procedures for that review process (see above) provide ample protection against a bias in using selective literature and good (but not perfect) insurance that no scientific views or publications are ignored or filtered out in the writing process. The authors do understand that in an assessment it is their task to carefully consider the whole

literature and provide their critical evaluation of what that literature means, without ignoring any finding that is based on proper science and well argued conclusions.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments (in their role as members of the IPCC Plenary) are responsible for deciding on the scope of any new assessment, providing comments on the second draft of assessment reports, adoption of reports (see above) as well as setting the procedures of IPCC and approving the budget. Governments (through government representatives of those countries, represented in the Bureau of IPCC) also oversee the preparation of draft decisions of the Plenary.

The government role in terms of scoping and adoption is clear (see above for adoption process) and is uncontested. In terms of comments on draft reports the response of governments is mixed. Some governments provide thorough and comprehensive comments, often collected from experts inside and outside government institutions. Other governments provide only limited or no comments, and do not make use of experts in the country. It is desirable that all governments provide serious comments on drafts and mobilize available expertise in the country.

The IPCC rules of procedure are reviewed and adjusted with regular intervals, but could be improved on the issue of selection criteria for IPCC elected functions (see above)

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The issue of non-peer reviewed literature has been a point of ongoing debate in IPCC. For a number of areas of IPCC work non-peer reviewed literature is absolutely essential, because the peer reviewed literature does not cover enough relevant information. This is certainly the case for the work of Working Group III that deals with technology, costs, policies and implementation. A proper chapter on Energy Supply for instance for an IPCC assessment cannot be written without considering the extensive publications of the International Energy Agency, the Worldbank and other respectable national and international institutions, including those from industry associations. When it comes to evaluating the effectiveness of climate change policies, information from national institutes or government departments is essential. Many of these publications have undergone a serious scientific review before being finalized, sometimes more thorough than for some papers in scientific journals, although they do not appear in scientific journals.

What is crucial for this category of non-peer reviewed literature is a proper screening of the quality. For this reason IPCC has adopted a rule that this literature can only be used if the writing team (so not an individual author or coordinating lead author) for the respective chapter has considered the quality and finds it of appropriate standard and a copy of the publication is deposited with the secretariat of the Working Group if the publication is not readily available on the web.

What could be done to facilitate the work of reviewers is to make these publications available through the IPCC website for reviewers to consult. Along the same line such on-line availability for peer reviewed papers would also facilitate the work of reviewers, who not always have access to those papers due to access limitations or subscription requirements.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The uncertainties are currently characterized through methods that are different for each IPCC Working Group. This is motivated by the different character of literature and established practices in certain disciplines. At the level of the Synthesis Report this creates problems. It would be better if a more common method for uncertainty characterization could be developed, in particular for the WG I and WG II area. However, this is not an easy task. A serious effort was made for the Fourth Assessment Report, but it then had to be accepted that different systems were maintained.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Quality assurance of data rests with the author teams. Quality control on the chapter texts is of course also the primary responsibility of the author team, but is greatly assisted by the extensive review process and the scrutiny of the Working group TSU's. Given the huge amount of work in handling the review comments and putting the final texts together the writing team does not always pay sufficient attention to quality control elements. Providing additional assistance to writing teams, for instance by giving them chapter assistants (young post graduates that IPCC provides with a stipendium), would allow writing teams to do a much better job on all aspects of quality control.

In terms of corrections of errors IPCC so far did not establish a formal procedure for correcting errors and communicating this. This would be a very useful addition to the IPCC procedures. Acknowledgement of errors and immediate correction is important for the credibility of the IPCC. This would of course also require a more professional communications capability in IPCC.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Communication with the media and the general public is by far the weakest aspect of IPCC performance. This is on the one hand caused by the fact that Summaries for Policy Makers and Synthesis Reports are approved by the IPCC Plenaries line by line. These negotiated text are a very carefully crafted balance in summarizing the IPCC reports, where particular wording is of key importance to countries. When these findings are to be communicated to the media and the general public, the need arises to use different wording in order to get the message across and that would then paraphrase the negotiated text of the summaries. That is the reason IPCC does not issue any written press release or summary for the general public on the substance of the SPMs and SYR. Communication to the media and various audiences is done by the chair/ co-

chairs and various authors only verbally, often supported by power point slides. Other organizations, such as UNEP, have produced simplified summaries however, with IPCC functionaries and authors providing advice. So far the IPCC Plenary has resisted any modification of this procedure on the grounds that it would lead to changing the approved messages in the SPMs/SYR.

On the issue of reacting to allegations of mistakes or improper procedure IPCC has so far not been able to respond quickly. There has been deep divisions within the IPCC Bureau and the Plenary on the question if IPCC needs to respond publicly. There has been a strong constituency in the past in favour of not reacting publicly at all.

Times have changed however and this lack of capability to distribute press releases or simplified summaries and the inability to react effectively in public on allegations made in the media is now, in my opinion, hindering IPCC and affecting its credibility. Establishment of a modern and effective communications capability is badly needed I think.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The IPCC provides an essential service to the policy and decision making community: it presents a common fact base, supported by the large majority of the scientific community, on what we know and thereby allows political discussions to be focused on what to do about it. This is of course greatly assisted by the fact that governments approve the SPM/SYR of IPCC reports. They cannot easily walk away from IPCC conclusions if that would suit their political positions.

If this IPCC fact base and the commitment of governments to the IPCC main findings would not exist, it is very likely that a whole range of scientific issues would become part of the political negotiations. This would be a huge setback. Alternative models, such as blue ribbon commissions or multiple competing assessments, cannot deliver the common fact base the IPCC can provide.

There are threats however to the authority of IPCC in many western societies where the rise of the blogosphere and the changing media culture is undermining authority in general, including that of IPCC. Governments find it increasingly difficult to base their policies on IPCC conclusions. Vested interest that would like policy action to be postponed are tempted to believe and support dissenting views. This is posing new challenges to the IPCC. Recommendations for IPCC to better handle these new challenges are:

- *Take dissenting views serious, even if they are not supported by peer reviewed literature:* if IPCC authors would specifically write a section of their report where they analyse the arguments the dissenting community is using to challenge IPCC and give a scientific rebuttal, there would be an proper scientific response to these dissenting view that can be communicated to media and the general public
- *Respond actively to the media:* if climate scientists, IPCC authors and IPCC management would respond actively to the media when allegations are made about incorrect IPCC conclusions, the undermining of IPCC authority can be greatly reduced

Other challenges the IPCC is facing are:

- the need for more professional support of IPCC authors (see suggestions for chapter assistants above)
- the problem of attracting enough qualified authors and reviewers, which may require some form of remuneration of at least the coordinating lead authors and specific reviewers and review editors
- the complexity and sheer volume of the work due to growing knowledge and higher demands on transparency and evidence base
- the need to strongly increase communications capabilities

These challenges require higher expenditures and a more professional management, implying a substantially larger budget for the IPCC.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

As pointed out under question 10, both a substantially higher budget as well as a more professional management is needed.

One element of this is to move to a paid full time IPCC Chair, to be co-located with the IPCC Secretariat and to strengthen this secretariat, including with an adequate communications department. This would strengthen the ability of the IPCC to develop the procedures and internal policies to cope with the challenges listed above (question 9), including a strong and consistent communication. A part time chair always has the challenge to avoid mixing his IPCC communication with that of his/ her other responsibilities. For a full time chair it is much more straightforward that he/ she stands for IPCC.

Also at the level of the IPCC Working Groups a more professional management is needed. In practice the workload of co-chairs has become an almost full-time job. Under the current structure the co-chairs from a developed country are generally given ample time by their home institutions (compensated by funding of the host country) to perform this job adequately. This does not apply to most developing country co-chairs who often are given much more limited time. As a result they are often not able to perform at the same level as the developed country co-chair. And this is aggravated by the co-location of the Technical Support Units with the developed country co-chair, leading to a much disadvantaged position of the developing country co-chair. Moving to full time paid co-chairs, funding the Working Group Secretariats (TSUs) from the IPCC budget and making the TSUs work equally for both co-chairs would correct this imbalance.

A third element of a more professional management would be the formalization of an Executive Committee, consisting of the Chair, one vice-chair (would require to reduce the number of overall vice chairs to one and give that person real responsibilities for part of the portfolio), the co-chairs of the Working Groups and the Secretary. Presently there is already an informal structure like this in place. Such an Executive Committee could handle day to day issues and prepare for Bureau and Plenary meetings.

In terms of an enlarged budget, it is probably best to maintain the system of voluntary contributions, since discussions on assessed contributions are unlikely to be successful. The establishment of a trust fund to enable IPCC to accept financial contributions from independent philanthropic institutions could be explored. The trust fund established after IPCC received the Nobel Peace prize in 2007 can be a model for that.

II. Any other comments

An important constraint on producing high quality assessments is the availability of top level scientists as authors and reviewers. In some of the questions above, such as on quality control, this was already touched upon. The frequency with which IPCC produces assessments and the scope of these assessments determine to a large extent how much time IPCC asks of the scientific community, time that cannot be spent on new research. At the end of the Fourth Assessment cycle a discussion was held in IPCC on options to address this problem. One interesting option is to reduce the frequency of large comprehensive assessments and do more narrowly focused ones (Special Reports). With real changes in the understanding of the climate system in general being rather slow, while in some areas that are crucial for decision making there is real progress (e.g. regional climate change projections), such a shift could really help reduce the claim IPCC lays on the scarce time of scientists, allowing them to spend more time on model comparisons and new research. For WG II and III more focused assessments would also be relevant, but since policy on mitigation and adaptation is developing rapidly, care has to be taken to inform decision makers timely about lessons learned.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Support for IPCC Bureau member, Convening Lead Author, Lead Author, Review Editor

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Scoping is the most important job to select policy relevant agenda of following works. So far it worked well.

2b. Election of Bureau, including Working Group chairs

Too much consideration of regional balance and balance between developed and developing countries spoils academic integrity, in some cases.

2c. Selection of lead authors

Sometimes, LAs recommended from developing countries are bureaucrats with little scientific

background and weak in scientific background, and tend to insist their own political situations. I have question on how these recommending procedure is opened to academic society in these countries.

I have some concern in the selection of LAs from developed countries, too. As IPCC reports become more and more influential to each country's policies and economies, political consideration are gradually sneaking in selecting LAs. In my country, Academic society keep some distance from IPCC like activities to keep neutrality of academies, I guess, that makes policy side influences stronger than before.

I recommend strongly to emphasize more academic background of LAs in selecting them, and procedure be reconsidered, when we consider this transitional political and scientific situations that surrounding IPCC now.

2d. Writing of working group reports

Throughout my experiences of working for 4 IPCC Reports, I found most difficulties in the process of writing a regional Chapter, which can be generalized over all regional chapters of WGII.

(1) LAs have to cover so wide geographical areas and sectors as well. Each region has its own environmental characteristics and the priorities of impacts on that points are different for place to place. It is beyond capability of only six LAs (who have specialties of their own field). Geographer type LAs are more appropriate to work in regional chapters. .

(2) There are other chapters in WGI (in the case of Glacier, Cryosphere in WGI and Water Resource in WGII) that deals with sectorwise analysis, and experts in general prefer work in their own academic territory. In the process of writing reports, those experts' knowledges are quite difficult to be integrated into regional chapters, because it is the parallel work and every LAs are so busy on their own work to help other chapter.

(3) For Working Group II (and also WGIII), usage of Non-pure-reviewed document is inevitable, but the assessment of its degree of uncertainty fully depend on LSAs expert judgment. There are many case studies exist, which cannot be generalized because they are base on the local specific situations. So the survey type research work is inevitable and very useful to cover assessment of climate change all the regions. Those Grey report are usually edited by the government and sometimes by international organizations, such as UNEP, UNDP, UNESCO, under severe review of experts. But, tracing back the back-up research papers are quite difficult and time consuming task for LAs and REs..

(4) Inevitable delays in the work of impacts. When we take the example of Scenario oriented impact studies (which is becoming major methodology in AR5), impact assessment is the very last part of the work. Researchers have very little time to make research by using climate scenario which is given by WGI and WGII. So the works of WGII are always under the time pressure. Because of such time constrain, sometimes not enough examination be done.

(5) Reconstruction of working system of those regional chapters should be seriously considered. For policy makers responsible to the regional land and system management, especially for planning adaptation to CC, scientific regional assessment of impact on their spot is what they want to know most. IPCC should respond to these strong requirements by integrating all the related knowledge, crossing over the WGI, WGII and WGIII and focusing on regions (if necessary in the form of special reports).

(6) To enhance regional research on impact and adaptation of CC more, especially in developing countries, is fatal. IPCC and international science bodies should help developing countries accelerate impact study. To organize network of impact assessment researchers to exchange knowledge and to have common methodologies are quite urgent task to strengthen regional impact science.

2e. Review processes

Strengthening of Review Editor's function became important. Responding to and judge the importance of more than 800 review comment is really a heavy task for only two Review Editors. Even in the second draft 'that should be finished within more than a month before the submission to WG Plenary contains nearly 100 points to be revised. It sometimes beyond REs' management to check all the references within such short time. As LAs' ownership on the chapter is clearly defined, REs cannot insist so strongly their comment So the comments remains as advise to the LAs.

Increase the number of RE, giving them more time, and provide them assistance work, balanced ownership with LAs, are the thing for strengthening review function to reach more reliable IPCC report.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

It is quite necessary to make timely reporting to policymakers by the shape of special report, when we observe that international policy design is very quickly moving now.

3. What is your opinion on the way in which the full range of scientific views is handled?

Each WG should and could have its own specific purpose, concept and working principle, which is more than "Principle governing IPCC activities". Present "Principle" is almost perfectly written, but is no more than technical working guide. This should be discussed among IPCC more and let LAs recognize it. LAs need "criteria" under which they can work when they pickup and handle information. Such Criteria could be different among WGs as follows.

WG1: Purpose: Make clear what natural science can and can not say from the state of the art.
Concept: Strict scientific integrity.

Working principle: Scientific logic. The certainty of data is important. Academic review system works well here.

WGII: Purpose: Warning the risk in each local region. Let Government and peoples know what will happen by CC.

Concept: Risk management in its wider scope (Risk assessment, Risk management, Risk Aversion, Adaptation) which include more sense of warning

Working Principle: Impacts and damages of CC appear differently region by region. Peoples living the spot want to know what happens in that spot. Not only the balance description but damage of the spot should be stressed in the report. Academic work is not enough to cover all places and all sectors, which inevitably needs “non-peer-reviewed (Grey) literature”.

WGIII: Purpose: Show policy makers menu (not prescriptive) to act or not, and how to act if necessary.

Concept: Policy alternative and policy assessment

Working Principle: Data and premises each alternative policy based on should more clearly be described in order to make policy makers share common understandings on the impact of alternative polkicies.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

As CC policy came into more reality stage, policy makers activities became so important now comparing that of the days of Second Report and TAR period. In parallel to this, policy makers' tendencies of intervening IPCC process become strong, It is crucial that IPCC has to make effort to keep appropriate distance between them and should not forget that the power of science and IPCC can only be kept by its independency and neutrality from some political manipulation.

Role of Government should be restricted within supporting IPCC work in its logistics, to show IPCC their questions that need to be solved by science to implement policy.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

As to the WGII, those Grey literature play a huge role to cover local findings. For instance in Japan, a quite influential survey report on already emerging impacts are written by governmental research institutions. They went under severe peer review procedure by more than 15 experts. But almost all of their works will not be academic reviewed paper, because of necessity of early publication for policy makers to act. The information including this document covers so wide range, fruitful and timely knowledge that cannot be done by pinpoint academic papers with slow reviewing process.

In case of developing countries, well organized academic papers are quite few. National Communications to UNFCC, sometimes, are the best informative document that covers a country. Many UN organization made survey report on impacts by using consultants and

reviewed stringently by external expert reviewers. But LAs should carefully check the original document when they use them, considering what happened in case of "Glacier".

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The procedure of handling uncertainty has progressed quite well through past report making process, I observe. But in WGII type work, expert judgment based on accumulated experiences on the ground plays large part of uncertainty assessment. In that case the selection of well experience expert as LAs is crucial but difficult task.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The "Principle governing IPCC activities" is well written as the guidance to LAs and REs to keep quality of the Report. But it is also the reality that, on the ground of writing report it does not work perfectly, from my personal experience. The substantial working time is so short and schedule is always behind, and many sentences inserted last moment cannot be well examined. That is the reality and there is possibility of making errors. IPCC have to set rule to rectify. IPCC cannot and should not be the Bible.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Huge misunderstandings exist in the society and policy arena that IPCC is the body to perform its own research and recommend something to policy makers. In addition, many policy makers mention to IPCC results as absolute revelation from science. IPCC needs to make serious effort to correct those misuse of their result.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

There will be no alternatives but IPCC. Some experts proposed Wikipedia type work. But it raises huge confusion to international decision making on this most critical decision of 21st Century. We have to sustain IPCC with gradual improvement as suggested now a day.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

I appreciate the hard work of IPCC secretariat group including all TSUs, while I saw the burden became heavier as CC matters became serious in policy field.

The voluntary participation system in researcher side also is becoming more pressed from policy side, which should be carefully checked, to keep neutrality of IPCC. Secretariat is recommended to increase staffs to check the report and to communicate to outside world.

11. Any other comments

I think this kind of assessment of IPCC activity by the third parties as IAC gives IPCC a very good and timely opportunity to recheck their activities and strengthen their scientific integrity.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead author, IPCC Bureau member

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

It is a transparent process based on academic trajectory and governmental recommendation.

2c. Selection of lead authors

The IPCC-criteria in this respect are (range of views, expertise and geographical representation) and to implement them the following indicators are used:

Range of views:

- sectoral distribution (research, industry, NGO, other occupation)
- affiliation

Expertise:

- primary expertise as given in the full nomination list
- CV-check
- Hirsch-Index, provided for information only in order to assess the impact of an authors' publications

Geographical Representation:

- citizenship
- WMO-region
- region type (DC, EIT, IC)

2d. Writing of working group reports

2e. Review processes

The ARs and the special reports are submitted to two stages of widely distributed, independently monitored review with participation of academicians, governments and governmental

organizations representatives, business and NGOs representatives from developed and developing countries).

The advances of each chapter of the IPCC reports (ARs and SRs) are followed during the 3d and 4th LA Meetings by two Review Editors (one from developed and one from developing country). They are responsible that all the comments and suggestions of the reviewing process are considered (accepted or rejected) by the LAs. The process of selection of the REs is the same as for LAs (see p.III).

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

For the IPCC, the top level is the key messages that appear in the Summaries for Policymakers. In these documents, each point undergoes not only the careful scrutiny of the scientists. These key messages need not be known with 100% certainty, but the level of confidence must be carefully stated. The Synthesis Report presents the most important points based on the literature assessed. In these documents, each point undergoes not only the careful scrutiny of the scientists. It must also be approved, word by word, by consensus, by all the participating governments, typically representing more than 120 countries.

2g. Adoption of report by the IPCC plenary

It must be approved, word by word, by consensus, by all the participating governments, typically representing more than 120 countries. Sometimes there are discussions on some formulations or topics, but the consensus guarantee that all the governments can adopt the key messages and implement them in the policies for climate change mitigation and adaptation.

2h. Preparation of any special reports

These are made on very sensitive and important topics which have been appointed by the governments or by the academy. In general, each of the three WGs is responsible about the SRs within its competence. It is made a Scoping meeting to define the outline of the report. Once approved by the Plenary, the process of elaboration of the SRs follows the same steps and rules as ARs.

I consider that the results of the SRs assessment are very important as an input to the ARs.

3. What is your opinion on the way in which the full range of scientific views is handled?

The first component of an IPCC assessment is that all of the relevant literature is considered whether or not it agrees with the dominant paradigms, and whether or not it has yet stood the test of time compared to other studies that have considered the topic.

An IPCC assessment involves a very large proportion of the climate science community at one level or another. In the course of four lead author meetings, the chapter teams discussed and debated the quality and validity of the literature and used their expert judgment to agree conclusions. The process requires not only outstanding scientific expertise and the ability to

synthesize large bodies of literature, but also effective teamwork. Many contributing authors are also involved in the process.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The role of the governments is very important in the IPCC process, and in my opinion it must be, because it is up to the governments to take the decisions and generate the general and specific policies that could guarantee the climate change mitigation and the sustainable development.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

In my opinion:

- a) Access more non- English language literature.
- b) Some proceedings of community workshops and symposia could contribute to the knowledge about traditional practices of adaptation and sustainable development (in this case the use of the document must be subject to approval of all the LAs of the chapter).
- c) Invite more contributing authors from business sector and NGOs.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Often, the desired quantitative data are not available and a more qualitative approach must be used. In either case, quantitative and qualitative assessments must be summarized using a rating system to help categorize impacts and risks.

- Use different models for the predictions (to prove the tendencies).
- Present and analyze scenarios.
- Differentiate the probabilities (high, medium, low).

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

IPCC relies mainly on peer reviewed literature in carrying out its assessment and follows a process that renders it unlikely that any peer reviewed piece of literature, however contrary to the views of any individual author, would be left out. The entire report writing process of the IPCC is subjected to extensive and repeated review by experts as well as governments (see p.3).

Consequently, there is at every stage full opportunity for experts in the field to draw attention to any piece of literature and its basic findings that would ensure inclusion of a wide range of views. There is, therefore, no possibility of exclusion of any contrarian views, if they have been published in established journals or other publications which are peer reviewed.

All the LAs of each chapter discuss and agree on the references to be included. And the criteria of their selection (see 2.III) are a guarantee for their expertise and objective points of view.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I think that the IPCC must have broader presence in the media. The positive impact of the IPCC work must be known not only on scientific and governmental level, but also on broader community level. The communicating campaigns of the IPCC must be improved and adapted to students, secondary schools and vulnerable communities' members.

It must be highlighted the relevance of the IPCC reports for the broader policies on sustainable development, energy security, impact on the creation of green jobs, biodiversity and water resources conservation, etc.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

In my opinion the IPCC assessment process is very comprehensive and is a guarantee of the quality of the IPCC reports. The governmental involvement makes it possible to take into account in the policy formulation the key messages of the IPCC reports.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

I suggest involving more emerging economies in the IPCC funding. The Secretariat should have additional resources to hire personal for communication campaigns or some SRs coordination as a logistic support to the TSUs.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

IPCC bureau member, Government reviewer

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

No comment

2b. Election of Bureau, including Working Group chairs

IPCC should care about the balance between previous authors and governments' officers in the composition of the bureau so that there is a wide range of point of views and approaches within the bureau . The mandate of the member should be limited, let's say 2 mandates. Some people

have been a bureau member for such a long time.

And they are getting old. IPCC should not be afraid of working with new people who can bring new ideas.

2c. Selection of lead authors

Most of the time people having good experience with IPCC are favoured. As I mentioned above, IPCC should not be afraid of working with new people who have good expertise in the field needed. For the case of the AR5, some WG have made a good progress on that.

2d. Writing of working group reports

No comment

2e. Review processes

Need more involvement of the contributing authors in the processes and the reinforcement of the function of the experts reviewers. The number of the Review Editors per chapter should be more than two or adapted to the size of the chapter

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

No comment

2g. Adoption of report by the IPCC plenary

Main weakness: only the SPM is subjected to the “Approval “process

2h. Preparation of any special reports

No comment

3. What is your opinion on the way in which the full range of scientific views is handled?

Could be improved by or analysing some climate sceptics’ views

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

OK but more involvement of developing countries especially the LDCs is still a big challenge for many reasons: for example the lack of appropriate experts

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Hard to understand for non scientific public and users

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Rectification of errors especially after publication should not exist and should be avoided as much as possible within the IPCC. Writing an erratum 4 years after the publication (case of the WGII AR4) could jeopardize the credibility of the IPCC. I hope that will be the first one and the last one . So, the review process and the roles of each kind of authors from CLA up to RE and CA should be strengthened

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

IPCC should focus on the communication strategies to avoid a reaction after an event or an attack. IPCC should be able to anticipate some events;

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Right now, no !

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The Secretariat should care more about the translation of the IPCC reports in non English languages. The French versions of the AR4 contains many errors and erratum should have been issued at the time of the publication. A system of quality control before the publication of the translated documents must be set up at the Secretariat.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead Author, IPCC Bureau member

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

See question 4.

2b. Election of Bureau, including Working Group chairs

No recommendations.

2c. Selection of lead authors

The nomination of authors by governments ensures a high level of trust among authors and their respective governments (cf. question 4). The final selection should remain the responsibility of the Bureau of the respective Working Group, because the Bureau which is led by the respective Co-Chairs has the competence to select relevant authors according to IPCC standards. The selection of Lead Authors is based on the following criteria: expertise, commitment to contribute to the IPCC and the variety of the disciplinary background of the authors.

An improved and permanent database with profiles of former, current and potential contributors to IPCC reports could be a valuable tool to facilitate the selection of experts for specific issues, ad-hoc requirements and future reports.

2d. Writing of working group reports

No recommendations.

2e. Review processes

Currently, nominees that have not been selected as authors or review editors for the writing of reports automatically become expert reviewers. However, there is no official procedure for independent experts that have not been officially nominated to apply for this job. Furthermore, reviewers' comments are currently not made anonymously, but to the contrary they are even made publicly available. While this increases transparency, it may prevent reviewers from being as critical as necessary. Hence, reviewers should be able to choose to anonymously review the draft.

See also question 7.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

No recommendations.

2g. Adoption of report by the IPCC plenary

No recommendations. See question 4 on the line-by-line approval of the Summary for Policy Makers.

2h. Preparation of any special reports

No recommendations.

3. What is your opinion on the way in which the full range of scientific views is handled?

In past reports, the range of scientific views has been handled in quite a balanced way. Ongoing controversies have been well reflected. Even in cases where the scientific standpoints of IPCC authors were subject to criticism, the critical arguments have been properly represented in the final reports. Repeated, broad, open and transparent rounds of reviewing draft versions of the report play a crucial role to ensure that any false, scientifically unsound, subjective, partisan and/or insufficiently qualified views of authors are discovered and pointed out by independent experts. The incorporation of expert and government comments needs to be properly overseen to ensure adequate handling. This role is currently fulfilled by the review editors, who need to be independent and widely respected members of the scientific community.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The intergovernmental nature of the IPCC is crucial to create political ownership. The close cooperation of governments and the scientific community is necessary to identify policy-relevant issues and the associated information needs of governments. Government approval of the proposed structure of IPCC reports is an important first step to make sure that all policy-relevant issues are addressed. The nomination of authors by governments ensures a high level of trust among authors and their respective governments.

This does not preclude a scientifically sound and politically unbiased assessment, since the process of writing IPCC reports is independent from direct government influence. It is one of the most important tasks of the Co-Chairs of the Working Groups to ensure the scientific integrity and to resist any attempts of governments to influence the scientific assessment process. Government comments received during the second round of review help to highlight politically contentious issues that need further explanation and/or appropriate revision, and to point out open questions that are not sufficiently addressed. This ensures that information with high policy relevance is carefully communicated in a comprehensible, concise way and supported by sound scientific literature. It does not mean that robust scientific knowledge can be excluded from IPCC reports at the discretion of national governments. Instead, it helps to ensure that policy-relevant, but still controversial and/or uncertain scientific findings are pointed out by governments and that these are qualified accordingly.

The line-by-line approval of the Summary for Policy Makers (SPM) by consensus of the IPCC Plenary requires intense discussions, which can regularly take four to five days. Once consensus is reached, however, the results of the reports have a high impact on global climate policy negotiations, since they establish a firm and concise starting point based on scientific findings that have been accepted and approved by all negotiating governments. This kind of ownership cannot be guaranteed simply by a presentation of scientific results to policy makers. In addition, the IPCC process had a remarkable multiplier effect on capacity building. Governments who intend to be part of the on-going discussions need experts in the areas covered by the three working groups. This is one of the most convincing effects of political ownership. Furthermore,

global political agreement on the core questions of the science related to climate change can reduce uncertainty about appropriate policies down to the regional and national level.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Over the last assessment cycles it has become "increasingly apparent that materials relevant to IPCC Reports, in particular, information about the experience and practice of the private sector in mitigation and adaptation activities, are found in sources that have not been published or peer-reviewed (e.g., industry journals, internal organizational publications, non-peer reviewed reports or working papers of research institutions, proceedings of workshops etc) ..." (Annex 2 of Appendix A to the Principles Governing IPCC Work).

This issue is of enormous importance for WG III because relevant data, reports and assessments are provided by international institutions like the International Energy Agency (IEA), the World Bank, the International Monetary Fund (IMF) and by private business. Although, this literature is not peer-reviewed in the strict sense, these reports are a focal point for scientists and stakeholders. In addition, many data are gathered by these institutions exclusively. Given the importance of their assessments for the global community, it might be useful to install some kind of peer-review. Admittedly, this goes beyond the mandate of the IAC.

Current IPCC procedures on the use of non-published and/or non-peer-reviewed literature need to be properly implemented to ensure a thorough quality control. The Technical Support Units (TSUs) of all three Working Groups have produced guidance notes for authors on the use of "grey literature" and have pointed out the importance of solid quality checks to the authors. Therefore, the TSU of WG III now requires authors to provide a broad range of meta-information for every source of "grey literature". This clearly indicates that the Working Groups intend to implement current IPCC procedures in a more effective way. Authors have to provide basic reference information, but also justify explicitly why the source is needed, what kind of quality control it has gone through and to which extent it is considered a reliable, valid and neutral source of information. This information will be collected and compiled by the WG III TSU and made available to the reviewers. Moreover, authors have to provide to the TSU electronic or – if not feasible – paper copies of each unpublished reference or references not readily available to the reviewers. These documents will then be provided to reviewers on request.

To increase transparency in the use of grey literature even further, one option would be to mark references classified as grey literature in the list of references and/or in the text of the report.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The IPCC should identify knowledge gaps. Uncertainties pertaining to current scientific knowledge should be made explicit through the use of appropriate qualifiers. However, it should be noted that the meaning of uncertainty and risk is quite different across the three working

groups. Working Group III of AR 5 is now committed to use the concept of decision under risk and uncertainty. From our point of view, this perspective allows a much more coherent framework compared to the previous assessments.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Quality control could be improved by a more targeted expert review. This is particularly important to ensure consistency across chapters and Working Group contributions. Such a targeted review requires the identification of cross-cutting issues, concepts, methods and definitions as well as the identification of different data sources used in the reports. As regards the use of quantitative data, sources should be compared, their reliability and consistency should be assessed and, if necessary, working group-wide decisions on the handling of data from different sources should be made.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

In the last years, the IPCC very much focused on the dissemination of its core publications, i.e. the Assessment and Special Reports. The recent criticism of the IPCC has shown that it does not have an efficient communication structure to properly react to criticism, i.e. to reply to justified and unjustified criticism quickly and with scientific precision. Further, the IPCC was not able to communicate its procedures and processes to the media or public in such a manner that the robustness of the IPCC Procedures and the great diligence in their application became apparent. Hence, the false impression was given that outright mistakes like the Himalaya error were the result of unreliable and politically biased reports. The IPCC appeared as a non-transparent block that did not feel the need to react. When it finally reacted, it took very long to come up with a response and the information published was very scarce. The IPCC seemed to be unable to handle a crisis. For the future of the IPCC it will be instrumental to install procedures and a management structure for crisis management which comprises more efficient decision making processes, clear assignment of responsibilities and a communication strategy which protects the integrity of the authors and the IPCC as an institution.

As the IPCC is an assessment body for policy makers, outreach to the general public is limited. This is not a deficit, but comes with the IPCC's tasks and available resources.

Some representatives of the IPCC have not always stuck to the principle of the honest broker but have endorsed certain policies. As the opinion of individual IPCC representatives tends to be interpreted as the entire IPCC's position, irrespective of how such a person voices his/her views, IPCC representatives should refrain from such statements in the future. A code of conduct for the Chairman and the Co-Chairs seems necessary. The Chairman of the IPCC and the Co-Chairs should not serve as national policy advisers nor should they serve as consultant for private business. Otherwise conflicts of interests are inevitable. The IPCC has suffered a lot in the previous years from these conflicts of interests in its leadership. Admittedly, there was no code of conduct so far which could be used as reasonable guideline.

As a general remark, the IPCC should always ensure that its messages to policy makers, the public and the media are policy-relevant, but not policy-prescriptive. It should emphasize that it is not the task of the IPCC to make decisions, but to inform decision makers about their options, the consequences of different choices and the uncertainty involved. The IPCC cannot necessarily make decisions easier, but it does have the chance to make better decisions more likely.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The IPCC is an unprecedented assessment body. Its importance for assessing the state of scientific knowledge about climate change can hardly be overrated. However, given the dynamic development of the body of knowledge on climate change related issues, continuous updates of the state of knowledge have been demanded by policy makers. However, the IPCC should resist undertaking quick and dirty updates. The IPCC should be encouraged to carry out a more innovative synthesis of the scientific literature. In addition, the IPCC should be supported to communicate knowledge gaps with the scientific community. It should be noted that the assessment of scenarios within the IPCC is fundamental for the whole assessment. The IPCC has rightly decided not to develop its own scenarios but to facilitate a scenario process jointly with the scientific community. A coherent and comprehensive scenario process is instrumental for assessing the costs of climate policy and the impacts of climate change. This requires a strong coordination across all three working groups. However, a reasonable assessment and evaluation is only possible if the scenarios are harmonized and standardized. A pure summary of scenarios as they can be found in the literature is not informative and useful for stakeholders. Therefore, the IPCC should be encouraged to find more efficient ways – jointly with the scientific community – to provide scenarios which inform stakeholders about the different options to manage climate change and their respective costs, benefits and risks.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The principles of the IPCC are silent on a number of issues that concern the management structure of the IPCC. Among them is a clearer description of the role and duties ("job description") of the IPCC Chairman, the IPCC Vice-Chairs, the Working Group (WG) Co-Chairs and Vice-Chairs as well as the role of the secretariat, the Secretary and the Technical Support Units (TSUs). From these descriptions it should also become clear that the core business of the IPCC - managing the processes to produce the reports - is done by the WG Co-Chairs and the TSUs.

Related to the definition of the role of the Co-Chairs, the role, status and authority of the Executive Team (E-Team) should be (i) formalized and (ii) strengthened. So far, it is a purely informal body with a mere advisory role to the Chairman.

Furthermore, recent events have shown that - in terms of communications with the media - the IPCC is not equipped to handle media requests and responses in crisis situations. That is, a crisis management structure is absent.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead Author. NOTE – this was a long time ago and as such my comments may be outdated.....

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Generally I think the process is robust – however one must be cautious to avoid prejudging or a scientific outcome by the way a policy question is phrased. I guess an argument could be made for the scoping phase to be more inclusive and given that this is not a scientific process I would support this. The more transparent the process is which identifies the questions to be answered the better. In this regard it may be a good idea to consider some form of public participation process in this phase. I know the politicians may not like this idea – but it could also be useful in determining issues such as public understanding.

2b. Election of Bureau, including Working Group chairs

On the one hand this is almost by definition a political process – given that the bureau is elected by the members of the IPCC which are Governments. As such it is inevitable that those nations which are active and influential will have greater sway in the process leading to the vote and hence on the election itself. Nevertheless it is difficult to see how this could be done differently and as such I think the process is adequate. In order to improve it one could consider some form of probity check on the process as well as a formal process of declaration of interest from the IPCC membership prior to a vote.

2c. Selection of lead authors

Whilst the process is a good one in theory, in practice I think it falls short. In my experience there are 2 shortcomings. Firstly, after the initial nominations and selection process, there is a scramble to get the mix right. This means lead authors, especially from developing countries, are approached to participate (or be nominated) and often have their “arms twisted” to participate. They then battle to meet the work load and hence provide quality input – resulting in their developed country counterparts dominating the process. Their names are included in the list of authors and hence add to the credibility of the output – but the input has been limited. Secondly I have experienced the addition of lead authors or contribution authors during the process who often seem to come with a political mandate – generally from developed countries and as such they can be very disruptive – let alone the dubious nature of the science they contribute!

Whilst the latter can be addressed by being more rigorous in the selection process and ensuring standards are kept at the right level, it is difficult to address the first issue. Scientists from developing countries are often heavily loaded and resource constrained. It may be an idea to

consider a pool of scientists from developing countries who are employed by IPCC specifically as lead authors. I appreciate that this may compromise the spirit of the process – but it would help to level the playing field.

2d. Writing of working group reports

Here the power of the volunteer is really apparent – those with the time and energy generally have the greatest influence. Often these are academics from developed countries with major research grants which enable them to dedicate time to report writing. As opposed to scientists from developing countries or even the private sector who do not have the luxury of time. As such the reports can be dominated by few. The review process must be adequately robust to cater for this.

2e. Review processes

Generally works well – but is often rushed and I am not sure if there is an audit of the extent to which reviewers input is considered. If not then this process should be introduced.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

This is where I think the process fails. In my experience the summary for policy makers tends to be more of a political process than one of scientific précis. I always felt that there was a degree of “compilation behind closed doors” when it came to the summary for policy makers. This is less so for the synthesis report which tends to be compiled in fairly close cooperation with the lead authors.

A suggestion may be for the first draft of the summary to be compiled by an independent team of scientific editors who have not participated in the process. Provision could also be made for minority opinions to be included – maybe in the form of (brief) foot notes.

2g. Adoption of report by the IPCC plenary

As above

2h. Preparation of any special reports

As above

3. What is your opinion on the way in which the full range of scientific views is handled?

This varies depending on the dynamic of the work group. Generally I think it is good and inclusive – but there is always the potential for a strong personality dominating the group and hence its outputs. It may be an idea to include an oversight role to constantly check the group dynamics.

4. Given the intergovernmental nature of IPCC, what are your views on the role of

governments in the entire process?

Similar to the above – some govts are very constructive, others absent and others try to dominate the process.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

This is a difficult one – to preserve the scientific integrity of the process one should insist on peer reviewed literature only. However in my experience the process is a dynamic one which in its own right develops data and literature – and waiting for peer review can slow things down and means that IPCC outputs are always out of date. A common practice in business is to have data quality centres which ensure that data quality is assured at all times. Maybe IPCC should consider such a concept to apply to the scientific data and literature used?

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I think that uncertainty should be explicit throughout the process. As such the uncertainty or breadth of opinion reflected in the working group reports must be reflected in the synthesis report (and this does usually happen) It should also carry through to the summary for policy makers. One should however note that no matter how well this “chain of uncertainty” is carried through the process, those responsible for communications – the media and politicians – will typically filter out uncertainty to align the report with their perceptions!

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I think the process for rectification needs to be more formal and rigorous – and that the communications should be handled a lot better!

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I think IPCC communications is variable. I sometimes think that the occasion – eg a COP plenary - forces a sensationalist approach by IPCC leadership – and as such IPCC comes across as activist as opposed to a group of sober scientists. This means that when mistakes are made the credibility of the entire process is questioned in an activist manner as well. I think IPCC needs to develop a far more considered communications approach – both in terms of its media statements as well in the words of its leadership.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I think the IPCC model is an excellent one – it has stood the test of time and generally has

produces excellent work. The fact is that inevitably process flaws will creep in over time – as such this review is a healthy one and can only improve the process – but I don't think it is fundamentally flawed.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

There is always room for more resources. It may be an idea to reinforce the scientific process element of the secretariat as well as a data and literature assurance function.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Reviewer, Lead Author, author of a Synthesis Report. Also convening Lead Author on a Special Report, participant in other assessments

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

The process here could be improved, since everyone, on both sides of the science-policy interface, is still learning how to do it. The 'old' view of an assessment was that it was a unidirectional process, scientists telling policymakers what they should know. The 'revised view' was that policymakers should ask the questions, and scientists respond. The 'hybrid' view is that this must be a conversation (negotiation even) where both sides offer topics and come to a mutual understanding of what the key issues are. The problem with the current process is that it is too slow – so the questions posed may well be overtaken by events by the time the assessment appears. There have to be enough iterations to refine the questions, but the door also has to be left open for emerging issues.

2b. Election of Bureau, including Working Group chairs

The bureau elections seem to have a very high political element, but the outcome is mostly fairly satisfactory. The requirement for north-south balance in the WG chairs is good, and in my experience very credible individuals are usually appointed.

2c. Selection of lead authors

This process is quite thorough and balanced – I think there is a good balance struck between representivity and assembling a team which can do the job and contains the acknowledged leaders in the field. There is a practical limit to the size of author lists, but I think more use could be made of the mechanism of 'contributing authors', who simply provide small elements of specialized text, without having to be present at all meetings.

2d. Writing of working group reports

The process strikes me as inefficient, but generally effective in producing balanced and correct (to the best of knowledge) text. I have experienced two different styles. One is to divide the text into small parcels, and assign authorship to each – a responsibility that typically lasts for the duration of the report writing. The second is for the CLAs to use the meetings as discussion time, and then draft the chapter themselves, with review by the author team. It leads to a more harmonious text, but is perhaps more open to abuse.

2e. Review processes

This is a strength of the IPCC process, and the IPCC sets the example for global best practice. In my experience written comments are very seriously considered, responded to, and documented, even where they represent viewpoints not shared by the authors. The role of diligent review editors, who are not part of the writing team, is crucial here - to ensure due process and to ensure that the response is appropriate.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

My experience is that these are effective processes, which combine the desire to ‘add value’ in the synthesis process (rather than just summarizing mechanically), but at the same time remaining faithful to the underlying text. The need to iterate this several times between the authors of the chapters and the summaries, and the fact that the summaries by necessity lag the chapters, leads to certain pressures – for instance, for authors the ‘state their likely key messages’ very early on in their writing process. But there are enough checks and balances in the three or so iterations to ensure that blatantly biased messages do not survive.

2g. Adoption of report by the IPCC plenary

A painfully slow process (which then puts a cap on the length of the summary reports) which often debates semantics and national agendas rather than addressing the validity of the statements, but one which greatly contributes to the credibility of the reports, and very seldom in my experience results in a substantial distortion of the message. At worst it leads to ‘lowest common denominator’ statements – how diluted does the statement need to be before it can attract consensus.

2h. Preparation of any special reports

In my experience this is just as thorough and diligent as the main assessment reports, and follows a very similar process. The Special Reports have somewhat lower profile than the main assessments, so they tend to attract fewer, but more specialized, comments.

3. What is your opinion on the way in which the full range of scientific views is handled?

The key word here is ‘scientific’. The IPCC is a scientific assessment process, not bound to

reflect the complete breath of views that exist – only those that pass the tests of scientific process, evidence and coherence. My view of assessments is that they need to reveal those areas where there are unresolved scientific uncertainties (including completely or partially differing explanations), and treat them transparently and equitably (which is not the same as giving them equal space). I further think it important that the chapter authors *do* indicate where *in their opinion* the most likely answer lies, but clearly flag that as an expert judgement. In my experience, IPCC authors do the first step diligently, but often balk at the second – forcing people who are less abreast of the issues to draw their own conclusions.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Necessary. Governments clearly do try to influence wording in both the chapters and summaries, but there are limits imposed on how much they can alter them to their purposes, firstly by the simultaneous efforts by many other governments, and the ‘veto’ which is imposed by the scientists and the data itself.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The ability to use both 1) peer-reviewed but not easily available (‘grey’) literature, and 2) relevant but not rigorously peer reviewed literature is generally helpful to the process, and in some cases, essential. The rules for doing so are clear and defensible – in the first case, they need to be placed in an accessible ‘library of record’ (this could be facilitated by the IPCC itself being an online library itself); in the second, the assessment process is itself a ‘peer review’. The weight given to such sources is generally *not* the same as that which is given to primary peer reviewed open literature, and important conclusions should not be built on such sources alone. But as complementary or additional evidence they are important.

Restricting the review to a narrow definition of peer-reviewed literature (ie ISI journals) is a huge potential bias towards developed country research in English.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The basic procedures are on the right track (a scale for frequentist statements, and another set of reserved language for qualitative uncertainty). They need to be consistently applied across working groups and chapters, and should be reserved primarily for high-level summary statements.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I have little insight here other than at chapter level. In my experience, tabulations and figures attract less scrutiny than text does. There is no formal mechanism to ensure inter-chapter

consistency – it is merely hoped that it will be revealed and corrected during the process.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Don't leave it to the end. Use communications specialists to help scientists to communicate effectively, but don't spin doctor the message, and the scientists must be responsible for the text themselves.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I think that it is sustainable and affordable, but as assessment processes proliferate and the period between assessments shortens, care must be taken that commitments to assessments do not erode the ability of the leading scientists to remain both at the cutting edge of research and effective in assessments - this means keeping the average time commitment workable (<15%), and recognizing it as a scientific output when it comes to performance appraisal. Scientific assessment capacity building is also important – the IPCC should have an explicit training program for authors, and also a 'fellowship' programme for early career scientists.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead Author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

The scoping of the report and the identification of policy questions is thorough. Improvements may come from a larger industry representation in the process.

2b. Election of Bureau, including Working Group chairs

No comments. It appears to work well although I've heard a few dissident comments about favoritism in the selection process.

2c. Selection of lead authors

Works well. Should remain with the focal points for each country represented to ensure that the official country points of view are heard.

2d. Writing of working group reports

Works well with good participation and idea sharing evident.

2e. Review processes

Rigorous as required. Most of the criticisms appear to be politically or financially motivated.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Process works well and the quality of these is excellent, which is essential considering the fact that these are the documents most frequently read and used.

2g. Adoption of report by the IPCC plenary

No comments.

2h. Preparation of any special reports

No comments. However, the special reports are widely read and useful.

3. What is your opinion on the way in which the full range of scientific views is handled?

I believe that this is done well although there is a tendency to duplicate certain specific aspects between different chapters which is an area that will continue to need attention.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The roles of government are essential to the legitimacy of the process. However, I do think that governments should be encouraged to seek more industrial representation in their contributing teams.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

This process works well although it would be virtually impossible without the Internet. I think the inclusion of grey literature should continue if this means references to reputable company reports. However, press and media material should be avoided.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Although uncertainty is a key indicator regarding the reported science, many decision makers ignore this vital component as an unnecessary qualification of the numbers presented as it makes their decision making process more difficult. We need to explore this aspect to see how we can

make the uncertainties ‘stand-up and be noticed’.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The process is adequate.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Media communication is handled well by the IPCC. A suggested aid would be to create a standard presentation package (structured for different audience groups) for the use of the government focal points concerned. This would help assure that a uniform scenario is presented throughout the world.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The process is essentially sustainable.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

This is done very well.

11. Any other comments

In a personal sense, I found my participation in the AR4 very rewarding and useful professionally.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead author, participant in a Scoping Meeting. Also reviewer of a Special Report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Holding scoping meetings involving researchers is important. It may be helpful to hold such meetings in two parts – the longer part where there are only researchers / authors / potential authors, and a shorter part where there is interaction with policy-makers.

A good practice of IPCC is to have co-chairs of WGs, typically from developing and developed countries. It is important that co-chairs from developing countries play an equal role. They do not always have the institutional backing to assist them.

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

The process for AR5 has started to seek suggestions for lead authors beyond government. This strengthens the process. In the end, however, in an inter GOVERNMENTAL panel (as distinct from an international research process), the final nomination should rest with governments.

Particular efforts should be made to include authors from under-presented regions (e.g. Africa) and groups – both business and NGOs have excellent researchers.

For all researchers, it is important that they act as independents, i.e. do not promote any agendas – be they of particular governments, industries, NGOs or other organizations.

2d. Writing of working group reports

The working groups largely work well. Each one is slightly different, and the role of the co-chairs is critical in shaping the style. The comments above about balance between co-chairs apply similarly to CLAs.

2e. Review processes

The process of peer review is unparalleled in my experience. Any improvements should only strengthened this. Having said this, the process (in SODs and last drafts) of responding one by one to each comment is cumbersome. Creative ideas are needed to maintain the excellence of review, but make the process more efficient and focused on the writing. One idea would be to give review editors discretion to identify comments that need no change.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

The full range of scientific views is very well integrated, by defining the job of the IPCC as assessment of the full range of literature.

Assessment of the grey literature is important, while procedures for quality control need to be in place.

The comments on including under-represented regions and groups, above, apply here too.

Industry should be encouraged to contribute its technical literature, often unpublished – but the *quid pro quo* has to be that they put the information in the public domain. I would not support assessment of information that remains confidential.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

IPCC reports are authoritative not only because they represent the very best science available, but also because governments consider the findings, particularly in the SPMs. This way of dealing with the science-policy interface is exceptional and should be maintained.

At the same time, IPCC reports should be scientific in nature, not political. They should be neutral to the fullest extent that science can be neutral – and researchers know all too well that they have their own biases.

Overall, my view is that this relationship should only be ‘tweaked’ – e.g. by having broader nominations, but of independent experts, as above; and making distinctions in scoping meetings.

One further idea might be to consider ways in which Technical Summaries – as summaries of the authors only – can be given greater prominence.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Addressed above.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

This has been an important improvement in AR4, and should be continued. Uncertainty is assessed differently across the Working Groups, and this is appropriate. In WGIII, the quantitative and probabilistic treatments of uncertainty that can be done in WGI is often not applicable.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The responses were entirely appropriate. IPCC strongly defended the science, admitted where there was a small error and reaffirmed that this did not change the balance of the evidence.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Regional workshops after AR5 should be supported. See above, perhaps communicate more on TS.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Consideration should be given to doing full assessments every 2nd cycle, having a cycle with a fuller range of special reports in between. Iterate between comprehensive, broad assessment and in-depth.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Government Focal Point

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

No experience, no idea.

2b. Election of Bureau, including Working Group chairs

The role of gender and geographic factors in bureau members election should be suppressed. Scientific quality and background should be the only criterion.

2c. Selection of lead authors

The role of gender and geographic factors in selecting authors/lead authors/review editors should be suppressed. Scientific quality and background should be the main criterion (with exception of clearly regional chapters where the regional factor should remain important)

2d. Writing of working group reports

No experience, no idea.

2e. Review processes

There should be one-stage review process (“expert review” only). If two-stage review process (i.e. including “government review”) is necessary, then the “government review” should be restricted to formal issues only (i.e. understandability, comprehensiveness, completeness), not to allow the “government review” to influence the scientific results.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

The SPM (of all working groups and SYR) should **not** be published prior to the Report itself. SPM results from the Report (not vice versa) and so the Report should be published prior to or simultaneously with the SPM.

2g. Adoption of report by the IPCC plenary

No experience, no idea

2h. Preparation of any special reports

No experience, no idea.

3. What is your opinion on the way in which the full range of scientific views is handled?

Some of alternative views are suppressed in some cases or they are not clearly expressed in the Report (possible influence of “government review” or the rules of selection of authors ???). All alternative views should be treated in the same way if they are based on sound science and evidences. For this reason we suggest not to use the “gray literature” as it could lead to huge amount of very different views, not always based on sound science. Alternative views should be stated both in Report and in SPM (View No. 1:..., View No.2: ...). When climate science is not confident with some results, it should be clearly stated.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

IPCC should **not** be the Panel **OF** Governments (i.e. led or influenced by governmental ideologies) but it should be strictly panel **FOR** Governments (i.e. providing the Governments with sound science-based information for their decision-making)

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Non-peer-reviewed literature should not be used in IPCC work. Huge amount of non-peer-reviewed citations in AR4 WG II and WG III is unacceptable. If it is necessary (exceptionally) to use some non-peer-reviewed information, it should be “internally reviewed” by IPCC (i.e. it should be sent to some expert outside IPCC. This expert should inform the IPCC whether the information corresponds to the relevant scientific literature or knowledge, or not)

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The rules for handling of uncertainty are established well but on my opinion they are not used properly in many cases. The uncertainty estimates should be based more on scientific analyses

(statistics), less on subjective estimates. The objective/subjective source of uncertainty estimate should be stated in the Report.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

No experience, no idea.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

No experience, no idea.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The IPCC assessment model needs some improvements and changes towards more scientific approach. It should get rid of all political and ideological influences that are present at some phases of Report preparation. Three most important topics are: selection of authors, usage of the “gray literature” and “government review”.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

No experience, no idea.

11. Any other comments

None

1. What role(s), if any, have you played in any of the IPCC assessment processes?

CLA, LA, Reviewer. Also member of IPCC task groups

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

In my view, policy questions should be raised by governments and not second-guessed by the experts involved in the IPCC assessment process. I think the model followed in the TAR was perhaps the most appropriate, whereby policy related questions from governments were collated and then agreed in an IPCC Plenary. these formed the basis of the Synthesis Report in TAR.

Although the scope of these questions sometimes overlapped, meaning that responses might involve some repetition (and hence unnecessary verbiage from the point of view of drafting a concise report), this is still the most directed approach I can think of to directly addressing key issues that governments have to deal with. It also reflects how the policy-science dialogue occurs in reality. I felt that this policy input was missing from the AR4, and hence some key questions raised in the final Plenaries that could have been addressed more effectively with advance notice, were not (e.g. implications of mitigation policy for climate change impacts; impacts of high-end, “worse case” climate and sea level projections).

2b. Election of Bureau, including Working Group chairs

I think the system works pretty well, within the inevitable political constraints that accompany any international body of this kind. The quality of the Bureaux members is somewhat mixed, but unless a mechanism allowing feedback on the composition of the Bureaux from the Co-Chairs and Lead Authors can be devised, it may be difficult to change this system.

2c. Selection of lead authors

This is again a very delicate issue, involving proper representation of the highest quality experts while at the same time a mix of subject expertise and perspective, gender, regional representation, specialist vs synthetic abilities, private vs public sector, and experience all need to be balanced. I think the present system works pretty well. I also believe that it is important for some flexibility to be kept in the system, for example to allow substitute authors to be recruited if authors withdraw, to allow new topic gaps to be plugged if they are identified, and to allow some mobility of authors between chapters during the writing process, if their contributions and areas of expertise are shown to provide a better fit to another chapter. Any changes from the original Lead Author list should still be subject to Bureau approval following a recommendation from the Co-Chairs.

2d. Writing of working group reports

The writing of the assessment reports is the core work of the IPCC. The author team, once selected, is presented with a chapter outline already agreed by the IPCC Plenary, following a scoping process at the beginning of the assessment. Some of those eventually selected as LAs and CLAs are present at the scoping meeting(s) ahead of the nomination process, but only a small minority. Therefore, many CLAs and most LAs are confronted with a chapter outline that they had no say in designing. For some this poses little difficulty, especially in those chapters where the candidate material for inclusion is fairly clear – often WG I chapters are like that, with a good degree of observational or model-based information organised around some standard, well-defined themes. For others, where the topic may be less well defined (e.g. involving methods, concepts, and some contentious issues such as those including policy) the outline of a chapter can be very important for the tone and effectiveness of delivery of key messages. Here, there has to be some flexibility in modifying the outlines, or some CLAs simply may not feel able to complete the job they are charged with.

The content of chapters is largely moulded by the expertise and experience of the author team.

After agreeing on an initial partitioning of work on elements of the outline in the first WG authors' meeting, the author team goes away and produces a zero-order draft. This will usually identify the strengths in coverage and, more importantly, the gaps needing to be filled by CAs or, in some case, by LAs if there is an entire key topic missing. Peer review at this stage is very helpful in this respect. Chapter drafting is very exacting work, and CLAs are commonly confronted with contributions (from LAs and CAs) that can vary enormously in quality, detail, style and accuracy. CLAs, by virtue of their role in combining these contributions, have a major role in determining the overall style of a chapter. I think this system works pretty well, though the CLAs don't always share this work equitably. This outcome is either purposeful (where one may have superior command of English and/or where one agrees to take on the overall co-ordination task to maintain coherence and consistency, or not (where one simply takes a back seat in the process OR where the two or three CLAs simply don't work together very well). The latter case can be problematic, and there seems to be little provision to alter CLA "teams" in these situations.

2e. Review processes

Quality control is mainly brought about by the review processes, and the Review Editors have a very important role here. They provide critical oversight of the authors' responses to reviewers' comments and were a very welcome new feature from the TAR onwards. Even with REs, some errors can still get through (witness the Himalayan glaciers episode), but that is more a function of who did the reviews. Perhaps the IPCC needs to consider how the chapters are described when soliciting reviews because the glacier error was not found in a glaciers chapter, but in a multi-disciplinary regional chapter covering the vast topic of Asia! For the AR5 the regional chapters of WG II will be in Part B of the report, and are supposed to draw on expertise across all three working groups. This way, some of the disciplinary gaps in coverage encountered in the regional chapters of previous assessments might be filled by authors from a broader set of backgrounds. However, the author teams are still limited in number, so some factual errors may still slip through. REs could provide more feedback on the areas of expertise requiring coverage by reviewers, but I can't see a ready solution to this. Errors are inevitable, and some are bound to slip through in spite of all the best efforts of the authors and reviewers.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

This has been quite a controversial part of the assessment process, but it is also the most critical, as the SPM is the key document coming out of each WG assessment, and the SR is the key cross-WG summary addressing policy-relevant questions.

I have already expressed my opinion that government selected policy-related questions are very useful for framing the SYR. I think the process of drafting the SYR should really be carried out in parallel with the full assessment rather than primarily after the assessment is approved (as in the AR4), as this helps all contributors to the assessment to focus on the policy questions to be addressed.

The SPM is a unique document crafted by experts but refined by governments with expert agreement, to best suit government needs. The laborious process of approving an SPM (at

Plenary) pays enormous dividends of legitimacy, credibility and (surprisingly, given the painful line-by-line process) clarity. I wouldn't recommend changing this – it is a model that works very well.

2g. Adoption of report by the IPCC plenary

This is a very meticulous process where governments subject CLAs to a rigorous examination of the main messages they are presenting, and CLAs can provide a defence and justification of their conclusions. It requires skilled chairing, but progress in approving different sections of the SPM tends to be very slow at first, but then to proceed in spurts, with a major acceleration towards the end as minds are focused on the need to approve an assessment before the Plenary time runs out! This may have the undesirable effect of subjecting material in the latter part of an SPM to less scrutiny than that in the early part. Some review of this process might be in order. Plenary sessions often finish well beyond their scheduled end-time, with all night sessions not unknown.

2h. Preparation of any special reports

These are merited if governments need information on a special topic that is not well covered by an assessment.

3. What is your opinion on the way in which the full range of scientific views is handled?

Pretty well in general, but the role of the REs is very important in ensuring this.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments are obviously crucial to the process, which I think has been very successful to date. If anything, I would like to see a little more government input offered on the major policy questions being requested from the IPCC assessments. A lot of advice is offered, but perhaps this could be formalised into questions agreed by governments ahead of each assessment (as for the TAR). In fact, if the government input was “formalised” in this way, it might give incentive for a wider range of govts to offer comments. There is usually a multitude of suggestions from a few countries, but far fewer from the remainder. Knowing that suggestions may find their way into the assessment and be acted on by the IPCC might encourage more governments to contribute.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

I think there is a need to consider more non-peer reviewed literature (sometimes called grey literature), as this often reflects recent developments, especially in the sphere of policy responses at different levels of governance (adaptation and mitigation), aspects of which IPCC seeks to evaluate. The inclusion of this is at the discretion of LAs, which is fine, and all documents have to be supplied to the WG Technical Support Unit in a readable format. I think the REs should be given a special responsibility to provide backup to LAs in vetting all material obtained from non-

peer reviewed sources to ensure that this is reliable.

A second perennial problem in the IPCC writing process is access to non-English language sources. This is very important for some topics - e.g. WG II Chapter 1 on Observed impacts of climate change reported many observed impacts in developed countries that routinely publish in English language journals, but far fewer from the developing world, mainly the tropics but even some temperate zone regions where English is used less frequently. There is obviously a heavy bias towards English language literature, which is partly a function of using English as the international language of science. English language journals have readily “morphed” into “international” journals by virtue of the language they publish in, even if their contents are often heavily biased towards research in the English speaking countries, where there is a natural language advantage. I think international journals have a responsibility here to re-consider how international their articles really are. One suggestion that I have made to editors is to consider publishing and peer-reviewing certain topics in other languages, and publishing in that language and in English. In particular, review articles synthesising a topic in another language might offer enormous benefit for a process such as IPCC. This is expensive, but much more inclusive, and would take away some of the advantages (and hence bias) conferred on the English language world in terms of contributors, editors, publishers and, most importantly, content. That is not an issue for IPCC to solve, per se, but it is worthy of more general discussion.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

This issue has been debated in detail for the past two assessments, and still isn't fully and satisfactorily resolved. The guidance offered by Moss and Schneider for the TAR still provides the best template for a strategy, but its application is still mixed among WGs, chapters and even within chapters. This is partly because of the large disparity in material being evaluated. I don't have further suggestions other than that authors seriously read the guidance. I don't think all authors in previous assessments really appreciated the subtleties of the advice being offered. These are difficult concepts to communicate even among experts!

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Errors discovered after publication have never been dealt with by the IPCC, which is a major deficiency. All authors are probably aware of minor errors in their chapters, but there has hitherto been no mechanism for correcting known errors, let alone possible errors that emerge in the public domain, post assessment.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

It would be tremendously enlightening for the public and sceptics of the IPCC process to have a documentary maker film the entire process from different perspectives (e.g. LA, CLA, RE, expert reviewer, government reviewer, co-chair, bureau member, government representative, NGO representative, media representative). The film makers would have to operate under strict

confidentiality rules during the process, but could trace the development of an assessment from the initial conception, through the scoping, Plenary sessions, author meetings, review process, SPM development, Synthesis Report development, final Plenaries, press conferences, publication. It would demonstrate the amount of dedication involved in producing an IPCC report as well as the checks and balances in place to assess the report.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Not really – perhaps slimmed down reports on more focused issues, but many governments still seem to demand a compendium of information.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The secretariat needs to be expanded in order to allow it to handle media inquiries, deal with possible errors and “protect” authors and co-chairs from unnecessary exposure to minor queries by developing capacity to handle such issues.

11. Any other comments

No more comments come to mind.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

LA, CLA, RE. Also Lead Author, Coordinating Lead Author of special reports

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

No opinion

2b. Election of Bureau, including Working Group chairs

I never had any direct involvement, but the necessity of a political spread of the working group chairs, makes that not always the most competent people are there.

2c. Selection of lead authors

This is a very important step in the whole process. In my mind it has a bias to representing certain views. It will be difficult to have a variety of opinions represented. Not much attention is

paid to building good teams, and half of the authors are there for simply representing different parts of the world. This makes author groups very large, and often not effective where two or three authors per chapter still do all the work. Also countries nominate, and sometimes nominate not pure scientists, but people also involved in cop negotiations.

2d. Writing of working group reports

Writing is done in different blocks of time where first the zero order draft is produced, etc. Writing does come down to very few authors per chapter; this is the result of the nomination process where authors are not selected for qualities, and to complement each other, but nominations are often there to represent regions of the world. The actual writing time in between the meetings is short, and exchanges between chapters are minimal. Exchanges between working groups are even less.

2e. Review processes

One scientific and one policy review is done. This as such is good, and as authors we are allowed to dismiss policy review remarks, that would lead to certain political statements. As such the process is good and open. However, major changes cannot be made anymore after the science review. This makes that for maybe more than a year before the reports come out, they hardly change anymore. This is too long, and prevents new material to be taken up.

Also commenting on the reviews how they have been dealt with is a time eating process, and needs to be done during the meetings.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

No specific comments

2g. Adoption of report by the IPCC plenary

Too much policy influence plays through this process. Countries can really change a message.

2h. Preparation of any special reports

All of the above apply

3. What is your opinion on the way in which the full range of scientific views is handled?

I think there is a bias in which authors are selected, quite often from the same groups. More effort can be undertaken to include also people with other scientific results.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The role of governments is too large in my mind.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

This is really left to the individual authors. It is their choice what to use. Only some other co authors and maybe a reviewer could judge if they have used the latest, and the best. This is a weakness.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

This is a weak point in the assessments in my mind. There are some statistical bounds given, to describe uncertainty classes, but apart from that there is nothing. No new analyses are allowed, so for scattered information in literature, an uncertainty has to be 'expert judged'.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

IPCC has high standards of review.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

No specific suggestion

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

No specific suggestion

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Shorter time frames, smaller group of authors, and maybe on specific assignments , could be an additional method

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Government Focal Point, Review Editor for a Synthesis Report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Strengths: Some important items dealt with

Weaknesses: Not taken better into account inputs from the UNFCCC process

Recommendations: Define clear rules on how to identify these questions

2b. Election of Bureau, including Working Group chairs

Strengths: Some geographical balance achieved

Weaknesses: Difficulty to respond satisfactorily to the challenge of balance: scientific capacities and other criteria (regional and gender)

Recommendations: Improve the rules for the elections, including at the regional level

2c. Selection of lead authors

Strengths: Some geographical balance achieved

Weaknesses: Difficulty to respond satisfactorily to the challenge of balance scientific capacities and other criteria (regional and gender); opacity of the process conducted in the TSU and almost no discussion on the choices made by the TSUs is possible in the Bureau meetings

Recommendations: Establish clear rules for the choice of these experts, ensuring transparency of the process; let the plenary decide on the choice of the experts and not the Bureau

2d. Writing of working group reports

Strengths: Relatively satisfactory

Weaknesses: Process not transparent

Recommendations: Establish clear rules for the writing process, including on the sources of the literature used and the processes used to derive conclusions from these literature

2e. Review processes

Strengths: Relatively satisfactory

Weaknesses: Lack of transparency on the way the comments are taken into account

Recommendations: Establish clear rules on how the comments are taken into account, ensuring transparency predictability for this process

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Strengths: Covers important items and findings of the Assessment Report

Weaknesses: From one Assessment Report to an other, there is no predictability on what the format of the SyR will be. There is a need to have rules on how to define the format and the content of the SyR. This leads to the fact that the SyR does not responds forcefully to important policy questions.

Recommendations: Establish clear rules for the format and the content of the SyR

2g. Adoption of report by the IPCC plenary

Strengths: Detailed discussion of the SPM

Weaknesses: It is not certain that some important topics from the point of view of policymakers are not considered in the SPM.

Recommendations: Revise rules for the format and the content of the SPM and the Technical Report

2h. Preparation of any special reports

Strengths: Focused assessment of a specific issue

Weaknesses: It is not clear who has to decide to establish the SR and with which periodicity

Recommendations: Establish clear rules for decision making on the elaboration of SRs

3. What is your opinion on the way in which the full range of scientific views is handled?

I am not sure that diverging views from those of the main and usual authors of the IPCC work are taken into account, because there is a sort of co-option of authors by their peers

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The role of the governments is rather of managerial nature, including the provisions of funding. Many government representatives are not aware of the needs of information of the political process on climate change e.g. under the UNFCCC

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The IPCC and the TSUs should make available in their web sites a list of the literature reviewed

for their work

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Given the different nature of the substance between groups (e.g. WG I physics, WG. II adaptation, etc.) it seems rather difficult to believe that it could be possible to have a common meaning of the concept of uncertainty between the WG. Uncertainty is often expressed in terms of probability rather than in terms of frequency and no clear reason is associated with the percentages given and their meaning. It seems that the authors themselves have no clear idea of what uncertainty means. There is a need for a radical change of attitude of the IPCC in this field in order to have a more credible communication of its assessments results.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

No clear rules and processes are applied on these matters

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Bad communication. Improve the communication strategy through a consultation process with the governments

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The Assessment Reports' approach is too a complicated and long process. Shorter assessments on specific topics would be more efficient in providing policy relevant information to policymakers.

The militia nature of the involvement of the experts in the work of the IPCC makes the IPCC model unsustainable in the medium term (experts' fatigue).

A permanent body of independent experts could be an alternative to the IPCC.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Establish a board to supervise the IPCC operational bodies (Chairman, Vice-Chairs, Co-Chairs, Secretariat, TSUs).

Establish a periodic scientific and managerial audit process (external and with the governments)

11. Any other comments

The image of the IPCC and of the associated authors has not to be appear as a closed club of arrogant experts.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead author. Also participant in some IPCC workshops

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

No insight

2b. Election of Bureau, including Working Group chairs

No insight

2c. Selection of lead authors

The issue of independence is not addressed properly; in several cases many authors from one institution (such as Hadley Center, NCAR) have been selected, whereby the reduced intra-institutional view of one institution may have become too large (say on the performance of models, on the validity of statistical methods); similarly groups of IPCC lead authors have formed, which seem to consider it their "right" to participate and influence jointly in the IPCC process (detection & attribution group; hockey-stick-family of researchers).

More emphasis on the independence of the authors among each other, from leading schools of thought should be given. Authors should serve only once (plus once as a convening lead author or review author), in some cases maybe twice.

2d. Writing of working group reports

No comments

2e. Review processes

Sometimes the responses are just lousy, say on the complaint about the damage-diagram in WG2 (see below).

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

I understand that some scientists have acted as national representative and as lead author in dual

roles. This practice should come to an end.

2g. Adoption of report by the IPCC plenary

No insight

2h. Preparation of any special reports

No insight

3. What is your opinion on the way in which the full range of scientific views is handled?

I can say this only with respect to WG I; I believe that this was usually done well, but because often "leading" authors have acted as lead authors, their own role was certainly sometimes oversold; the hockeystick-affair was certainly not a highlight of the IPCC history.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I would prefer to see a stricter separation of the scientific and political spheres; also the influence of environmental ministries and agencies in proposing lead authors and other scientific personnel should come to an end; instead, academies or other suitable academic institutions should guide the selection of lead authors and other scientific personnel.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

More non-English material should be used; in particular regional issues have been dealt with in legitimate scientific but non-English literature. Non peer-reviewed literature should be dealt with if it represents legitimate scientific material, such as conference proceedings, reports of legitimate scientific institutions and governmental agencies. Material provided by vested interests (including insurance companies, other companies, NGOs) should in principle not be considered because of the interests of such organizations.

Also very new peer-reviewed literature, which has not "permeated" the scientific community, should be considered with care, as no serious attempts for falsification have been made. This is in particular so for material, not only but also provided by lead authors and their hinterland, which has been published on fast track to just meet IPCC deadlines. Papers without proper description of the methodology and access to the data needed to reproduce the results should not be considered.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The overall qualification "likely" etc. is correctly presented in the IPCC documents as subjective

judgement; however, when transferred into the public sphere a more objective probability meaning is often assigned to assessments; in many cases the terminology is not understood by the public and by stakeholders. So to speak: the uncertainty of the uncertainty assessments is poorly communicated.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The dealing with errors (i.e., incorrect assessments of consensus and/or of solid evidence for certain claims) in WG II is insufficient. In WG I no such errors emerged (to my knowledge) in AR4 (there were the problems with the hockeystick in TAR), and neither the IPCC office nor the incoming chair of WG 2 seem to have been willing to seriously deal with these issues. Also the AR4 chairs of WG 2 were obviously unable to deal with the emergence of outright errors and of misleading assessments.

It is remarkable that a presentation (in Barcelona) was given by Dr. van Ypersele (supported by Dr. Field) in November 2009 repeating the Himalaya error without qualification – i.e., long after the error had been detected and reported to IPCC. (The pdf is available from an IPCC web-site.) This demonstrates an unprofessional arrogant behaviour on the side of the IPCC office and some of the leading scientific personnel.

The failure to deal with the misleading extremes/damage AR4-diagram (see below) was also remarkable, in particular after it had been subject to a debate in the review-phase. A similar misleading diagram was shown in TAR.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The response of the IPCC to the (illegal) publication of the mail from CRU, which disclosed internal communication which was read by some as attempt to manipulate the IPCC process, was entirely insufficient. The "Voodoo-science" quote of the IPCC chairman was a major communication blunder, which damaged the reputation not only of IPCC but of all climate scientists. Unfortunately a respectable consequence (retreat of and apology by chairman) was not drawn.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I do not understand the question – what is the "IPCC assessment model"?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Yes, I have published a piece in Newspapers – the full manuscript is attached! It contains 6 bullet-points, namely:

- 1) End of the practice that dominant scientists assess to large extent their own work and that of their friends.
- 2) Economic and political particular interests must strictly be kept out of the process of assessing scientifically legitimate knowledge claims. Publications by companies or by NGOs do not represent such scientifically legitimate knowledge claims.
- 3) An independent body is needed, which is not part of the scientific assessment process, which defines and supervises procedures to deal with complaints about errors (in assessing the science) and conflicts of interests.
- 4) Measures are implemented so that the results of the assessment of scientifically legitimate knowledge are largely independent of the involved scientists – which imply that lead authors are serving at most in two such reports, while most are replaced from one report to the next.
- 5) The IPCC states and describes explicitly the fields, where consensus in the community is not established (also at the SPM level). Questions from a critical-sceptical public are explicitly addressed. Explicit efforts for falsification are needed, and the IPCC should address to what extent such falsifications have been attempted.
- 6) The political functions and the scientific functions shall be dealt with by different people.

II. Any other comments

The exchange in the review process on the extremes/damage diagram in "supplementary materials to Chapter 1 of WGII" is an example demonstrating that a writing team had its own agenda in conveying a perception of a link between temperature and damages. See <http://rogerpielkejr.blogspot.com/2010/01/what-does-pielke-think-about-this.html>.

The original use of the “Miller” paper drew a number of comments from the expert reviewers. One of those experts was Annick Douguedroit of University de Provence, who commented (http://ipcc-wg2.gov/AR4/SOD_COMMS/Ch01_SOD_Expert.pdf at p. 122)

“Fig 1,5 is not reliable from a statistical point of view because the significant trend is pulled upward by "outliers" (especially 3 points with losses >100000) which provoque a pseudo-significancy as it is suggested by the authors themselves in lines 18-21 [of the SOD]. So I propose "Since 1970 the global normalized results do not show any statically significant correlation with global temperatures." and to remove the end of the paragraph and the figure 1,5 because it can mislead a reader not familiar with correlation."

The response from the “Writing Team” was:

“Figure moved to Supplementary Figure and employed a different plot that smoothes catastrophe losses and shows these alongside temperature. After smoothing (that thereby removes the peaks noted) the correlation remains. The text now provides a balanced commentary on this.”

So, it is clear that the graph seen in the supplementary materials to Chapter 1 of WGII was the creation of “Writing Team” (and not taken from the reference given). The "new" diagram was actually even worse than the original, as it was based on an even shorter time series; also the (methodically limited) informational value of the diagram has not been discussed in the literature

(false quote).

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead author, contributor, scientific reviewer, member of government delegation to the plenary, support of government review, review editor

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

I have not been directly involved in the early IPCC meetings that have formulated the key questions and the sets of chapters and their major headings. That there are such meetings involving the government representatives and scientific community is to be encouraged—it is essential for scientists to get a sense of how the government representatives see and frame issues, just as it is important for the scientific representatives to get input on the key issues that need to be recognized. I would note, however, that setting up such complete outlines four years in advance of the completion of the report can create a rigidity that can be difficult for the authors to deal with through the process (i.e., without significant reconsideration, all relevant information must be forced into the preset bins) and can inhibit the inclusion of emerging information and issues (e.g., ocean acidification).

2b. Election of Bureau, including Working Group chairs

I have not been directly involved in the actual election process, although I have been peripherally involved in the process of my Government in selecting a leading scientist to nominate to co-chair a Working Group. An important challenge is to find a way to ensure the independence of the lead author, when it is the government that is making the nomination and providing the support for the author and the WG office, especially when most scientists working in the field are supported by government funds and, in a number of cases, actual employees of the nominating government. On the one hand, a strong government commitment to the process can really help to drive the assessment process (as, for example, what happened with WG I in the initial years when led by Sir John Houghton); on the other hand, questions can come up (not necessarily valid ones) about how a government's policy interests might influence how findings are phrased (as, for example, when the WG I process was led by Dr. Susan Solomon and there was a very strong tendency to focus primarily on only what was very well established and not allow in findings where levels of uncertainty were significant, even if potential damage and risk was especially high (e.g., not using geological analogs to give an indication of the potential magnitude of the loss of ice from Greenland due to ice stream movement). There can also be problems when national delegations come to plenaries and either feel they must support their nation's lead scientists or defer to them and hold back in their criticisms.

With no intention of casting aspersions on any of the past or current WG co-chairs, it seems to me that scientific independence might be more clearly provided by running the selection process of the Working Group co-chairs through a process led by ICSU that would involve the national academies of sciences of the various nations—or at least having this process make nominations. To create full independence, the support for the WGs and the WG Technical Support Office would have to come from contributions of multiple nations and the staffs of these offices should be international.

2c. Selection of lead authors

I presume that this question is referring mainly to the selection of convening lead authors—that is, the one to a few individuals that will have lead responsibility for getting the chapters completed. While there are selections of lead authors to assist the convening lead authors, this list has seemed to me more fungible (e.g., in preparing a very strong technical review of the first draft of a chapter in one of the assessments, the authors actually brought me on as a lead author, though asking me to pay for my travel to the next authors meeting). For the lead authors, it seems to me quite reasonable to keep it flexible so that the most knowledgeable emerging scientists can be brought into the process as it goes along; while such scientists can be called ‘contributing authors,’ this really is rather limiting.

On the selection of convening lead authors, IPCC faces a real dilemma and has had not very well-discussed problems as a result. On the one hand, the IPCC can select a leading expert or two as convening lead authors—the potential problem is that these individuals will (even if subconsciously) frame the chapter based on their view of the world, and in areas where there are disagreements, this can make it seem rather difficult for those supporting other views (and I do not only mean only those holding contrarian views—there can be different schools of thought on the science, on uncertainties, etc.) to feel they are getting a fair shake (and so there can be comments made that someone’s views will not be in there because they differ from those of the convening lead author). It helps somewhat to have multiple convening lead authors. [As examples of the problems that have arisen: (1) a convening lead author of a chapter in the WG II SAR (as I recall) was insisting that there would be no further improvements in the efficiency of fossil fuel combustion devices and so renewables would soon become more cost competitive, leading the US to insist that the chapter be rejected at the final plenary and requiring extensive post-plenary negotiation to work this out; and (2) a convening lead author of a WG III chapter in the SAR (again, as I recall) was insisting that the imputed economic value of life be significantly different between developed and developing nations, leading to significant protests and the leaders of some developing nations threatening to withdraw from COP-related meetings, etc.].

The other approach that IPCC has used is to select as convening lead authors scientists who are not particular experts in the field, but are synthesizers and integrators who will be expected to reconcile the conflicting views in areas where there are different perspectives. While this can be helpful, the potential shortcomings are that the authors can be criticized as not being experts in the field, and that, with each particular area involving deeper and deeper understanding of nuances, they end up getting off track. [As an example here, the lead authors of the sea level rise chapter in the WG I TAR over-represented findings from the European scientific community that was using radar and surveys to estimate the changing mass of the Greenland and Antarctic ice

sheets, and underplaying the relatively short, but conflicting, record of mass change via satellite gravity measurements, leading prominent glaciologists to recommend the Government reject the chapter. Again, it took considerable negotiation to work out a compromise, and this came apart, in some sense, for the WG I AR4 where it was decided, due to the uncertainties, not to really address the issue of change of mass of the ice sheets by dynamic processes—causing considerable disagreements with IPCC’s findings by those in this community.]

It is not really clear how to fix this, except to get better recognition of the problem, more clearly stated guidance to the convening lead authors, perhaps intentionally having one (but not all) of the convening lead authors be from slightly outside the field, and getting a widespread scientific review by more than the IPCC planning meeting where outlines are now decided (so, for example, with an outside scientific review—including inviting open comments—on the outline itself).

2d. Writing of working group reports

There are three very distinct aspects to comment on here: the technical chapters, the technical summary, and the summary for policymakers. Each deserves distinct comments; *Technical chapters*: Overall, having been a lead author, contributing author, review editor, and reviewer, I’d say that, while very time and effort intensive, the end products have been really excellent documents, given their intent being to provide a detailed, fully referenced critical review with the audience being other experts in the field and as the basis for summarization of the issue in the technical summary. With each assessment having 40-50 technical chapters, that in the end all of them have been accepted after completing a very complete and challenging review process is truly remarkable, given the challenging questions being addressed.

A few challenges are emerging, however. In the early IPCC assessments, the chapters were able to really be reasonably comprehensive reviews of the existing literature, so were able to cover the full range of perspectives on various issues, and to cover all aspects of the problem. This is, however, no longer possible—there is now so much material that there is no way that the chapters can even consider all of the newest papers, much less consider all of the recent papers on an issue—even when each new assessment is just intended as an update of the previous one (and that of the previous one, etc.). Although the author discussions at their meetings do go through and cover a much wider set of papers than ends up in the ultimate chapter, not including everything has led to the misimpression that the views of those with unconventional viewpoints are not being fairly considered when really there is just so much else that is widely accepted to be presented in the limited number of pages.

For WG I, I think that it just needs to be more clearly explained that the chapter is going to cover the key science results and papers, and not all—and then maybe have explanatory boxes as supplementary information on a Web site providing a brief summary and response for a set of the key arguments being put forth by critics of the IPCC. For WG II, the challenge is more difficult, especially for the regional chapters (given that Asia is considered a region, etc.). Condensing down these summaries to the roughly 25-30 pages allotted means that the presentations are so integrated and scaled up that they are essentially useless to those looking at impacts on fine enough scales that adaptation options can be presented. Because impacts are so unique to each

region, I think each of the regions (and likely sectors) needs to become a wikipedia-like presence on the Web, with lots of details kept, and then write the summary chapter for the full report based on key findings and generalizations from the detailed Web presentation. By then providing access to this site, those needing information (e.g., resource managers, etc.) can get the detailed information they need. For this to happen, countries are going to have to be supporting the science and efforts for such detailed information to be generated (e.g., the Arctic Climate Impact Assessment provide the needed detailed basis for the Arctic, the US and Canadian assessments for North America, etc.). For WG III, I think they too are going to need to have supporting materials on a Web site as the amount of information continues to grow and the value grows of pointing to successful and unsuccessful examples. Thus, for the chapters, I think more reliance is going to be needed on using the Web for vital supporting information.

Another key issue for the chapters is to make sure they are clear that the uncertainty and confidence level presentations are based on the traditions in the field—so in the science area, presenting statistical significance, etc. The controversial event in the Second Assessment Report involving Ben Santer arose because the chapter used statistical jargon that critics wanted to use out of context to indicate the result was the opposite of what it was intended to be [the chapter said something like that the change could not be definitively related to human activities—sounding like humans were not responsible, when what the intent was to convey that, mainly because of a lack of information about the level of variability in the preindustrial period, while two-standard deviation confirmation (so like 95% confidence) had not yet been achieved, there were many indications that a human influence was evident (hence the statement that a human influence was discernible in the summary for policymakers and instruction to the author to clarify the jargon so it was less likely that statements could be taken out of context). It is really important that the IPCC assessments carefully explain their basis for making statements and to avoid jargon.

Technical Summary: The Technical Summary process has seemed to me to work pretty well, but again it is absolutely vital that great care be taken to explain what terms mean. The IPCC effort to develop the likelihood-level of confidence lexicon has been very important in trying to regularize the presentation and communication to wider audiences, and in the Technical Summary it is vital, given that the Technical Summaries are likely to be widely read and form the common basis for the Summaries for Policymakers and Synthesis Reports, that the three WGs each as rigorously as possible summarize their findings carefully using the lexicon.

Summary for Policymakers: There are a number of the critics of IPCC that do not think scientists should participate in preparing the SPMs in that in these documents, the audience is policymakers and the basis for the findings is relative likelihood rather than test of statistical significance. I don't think that IPCC has done particularly well in explaining this, and I think this really needs to be done as I think SPMs are vitally important for governments and society. I liken this process to a cancer patient going to a doctor to discuss the treatment. The doctor could (as some IPCC scientific critics argue) present the patient with the detailed scientific papers on cures (equivalent to the technical chapters)—not something that many patients could deal with (Stephen Schneider, however, has a book on how he did want these to consider for himself), asking for information they could understand. The doctor might present them the American Cancer Society summaries of possible treatments (equivalent to the Technical Summary); yet

again, the patient would likely ask the doctor what this means for them and their situation. The doctor might then finally have a discussion with the patient, clarifying terms and explaining the relative strengths and weaknesses of each possible treatment in terms of relative risk in their particular situation, etc. I view the SPM process (which includes initial drafts by the scientists and then a review-rewrite cycle or two and then a plenary) as a documentation of this doctor-patient like discussion—it has to be accurate on the science, but in understandable terms and in the decision context the patient wants. As noted above, it is just vital that what SPMs are intended to be and how they are framed that needs to be carefully (and repeatedly) explained to all.

2e. Review processes

Conceptually, I think the process is pretty well structured, with a few exceptions, as noted below. In practice, however, there are clearly some shortcomings that have apparently led to some of the recent controversies that have led to this review.

At the conceptual level, I think it appropriate that the zero-order drafts of the chapters go just to selected technical experts for peer review, the issue being how the general content and approach to the presentation—do they have the right issues, framing, etc. For the review of the first draft that goes out to a much wider and general set of technical reviewers, I think this has worked pretty well. One effort I have tried to promote is to try to make the process, and the perception of it, appear a bit more independent by having the international science associations—e.g., the associations of the International Union of Geodesy and Geophysics for the WG I report—name some official independent reviewers for appropriate particular chapters. This worked in part and I think should be continued, but is a not easy organizationally in that the IUGG is not an official observer to the IPCC, though is through ICSU. For the country review of the second order (penultimate) draft, which allows each country to choose its own approach to putting together its review process, the inclusion here of review by public and private NGOs has also generally led to very constructive comments.

But there are shortcomings. A major one for the expert and technical review stages is that there are so many chapters to review, that it is really hard for an individual (especially for the many experts who are serving as IPCC authors) to review more than a few chapters, even though some threads carry through several chapters, sometimes in different WG reports. The problem is both due to this all being a voluntary effort and partly due to the overall press of science and activities. I have been able to try to review of order 5-10 chapters recently as I am retired and, though active in many ways, have just decided it is important to do. Ways have to be found to make sure that there are enough qualified reviewers involved—and IPCC WG II trying to overcome the shortcomings in its AR4 report by going from 20 to 30 chapters is not my view of how to accomplish this. One approach I would suggest is augmenting the technical part of the review with a full public review—that is, posting of the draft chapters on the Web and encourage their review by professional societies, professors with their classes, critics of IPCC, etc. Indeed, for some chapters, the review process already typically generates set of comments that are twice the number of pages of the actual chapter, but others need more exposure. The problem is that the media can abuse the process by publicizing what are tentative results, but if this would lead to more review comments and identification of problems, I think it could be made worthwhile if

accompanied by a thoughtful statement/policy for the media (e.g., don't quote text as it will be changed, but feel free to present general nature of findings).

For the national level review of the penultimate draft, my government approach to the review (which I coordinated for second and third assessments) had three parts: (1) each agency was asked to prepare its own review comments; (2) a knowledgeable program manager was identified for each chapter and tasked with getting reviews by 10 experts in the area; and (3) a draft was made available to all interested parties through a public notice (IPCC leadership did not really appreciate this as media sometimes did not abide by restricted quote/citation policy). Based on all of these inputs (all of which had to have a name attached—doing this led to more responsible comments and critiques—an interagency panel of the program managers above drafted an integrated set of Government review comments that was then reviewed at high level before submission. In addition, the government sent in the full set of comments received, but as a backup reference for the official comments in case the chapter authors wanted to understand the source of the comment. And this was not the end of it—when the final draft came back just before the plenary, we sent the revised version back to the agencies and technical reviewers asking if the authors had paid attention to their comments (in one case in the SAR and one in the TAR, they had not, and the government then pushed the authors to undertake further revision—and this happened and had to be specially approved at the WG or IPCC plenary [I should note that the objections were not that the government position had to be adopted, but that the authors were not adequately representing the views of the scientific community, as they were charged to do.] This took a lot of work and was particularly hard when reviews of different WG reports overlapped in time, but I would think that if this had been done properly for AR4, the Himalayan glacier problem would have been caught. My sense is that for the AR4, the national review processes were not adequate—how else to explain an error by a factor of 10 in the area of the Himalayas, etc. In my view what is needed is (1) for the IPCC to make much more clear to its national members how important the review of the second order draft is, and (2) to again post the drafts and allow for a Web review. There would then be lots more comments coming in—not all get incorporated, but all should get a fair consideration and documentation of how they were or were not addressed (a process the review editors need to check, as has been the case).

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Comments on the SPM are included in response to an earlier question. Regarding the Synthesis Report, it was originally, I believe, an integration of the three SPMs, and so organized primarily around the scientific/expert-like organizational framework of the SPMs. In the SAR, this led to the WG II results on impacts being only available by sectors when the policymakers wanted it by region—and the result was that there then had to be a special IPCC report that cut and paste the results in the Assessment into a regional format. In the last couple of assessments, this has changed, and the organization is around a set of questions posed very early in the IPCC process by (or at least for) policymakers (i.e., drawing heavily from those involved in the COP process). While it is very desirable to have the summary framed around questions posed by policymakers, having these set up early in the IPCC effort can be really constraining, especially if there is not flexibility to do some adjustments based on the outcomes of the efforts along the way. I'd basically like to see a bit more flexibility toward the end in how the questions are phrased, adjustments to scope, etc. In reality, what has been done is a bit of stuffing items into questions

to get across information rather than perhaps doing a bit of rephrasing, going to more questions, etc. to make the results as clear as they can be.

2g. Adoption of report by the IPCC plenary

Just to note that the technical chapters and the technical summary are actually authored documents and the IPCC plenary “accepts” them—agreeing that the authors have responsibly gone through the appropriate process. This has generally gone well, but, as indicated there have been a couple of times when changes to the final drafts needed to be made and specifically reviewed and accepted by the plenary. In the Santer case in the SAR, this led to the IPCC critics, whether by intent or lack of understanding, making a lot of charges that simply were not true. Pretty clearly, the IPCC needs to make sure again and again that its processes are understood.

On the other hand, the SPM process is very extensive, requiring sentence-by-sentence consideration (sometimes even word by word) by the full plenary, and often work by breakout groups to go into more detail about the basis for statements. This effort can be very time-consuming, go late into the night seeming to spend inordinate time on very fine points, etc. But, overall, I think these efforts have generally been quite worthwhile—that necessary discussion that scientists and policymakers must have (like a doctor and a cancer patient) to really come to understanding and then agreement on very difficult issues. While many complain, having been a (locally) elected public official as well as a scientist, I just think the time and effort has to be invested to get to the quality products (both documents and informed officials) that have been the result. Complaining scientists just need to get over it and participate (perhaps making sure their time is better compensated—or at least their delayed performance on their research grants is not penalized)—the end result is needed (and in the end was recognized as valuable by award of the Nobel Peace Prize).

2h. Preparation of any special reports

I think it would be helpful to have IPCC take on a few more topics through special reports—meaning reports on specialized, relatively involved topics. Right now, special reports are needed on projections of sea level rise, ocean acidification, and more—these are relatively involved and controversial topics for which there is a need to present a reasonably complete assessment, catching these areas up to the level of detail and authority on other topics in the main assessment reports. While the process can be pretty involved, this can be what it takes to pull the scientific community together (and spur research and comparisons) and to get the policymaker community up to speed on such key issues.

3. What is your opinion on the way in which the full range of scientific views is handled?

Given the Earth system and projecting its future and resulting societal and environmental impacts is arguably the most complex scientific undertaking ever, it should not be surprising that there are uncertainties. As Australian colleague Barrie Pittock puts it, “Uncertainties are inevitable; risks are certain.” In my view, the IPCC chapters spend extensive time covering uncertainties, and they cover the various issues raised by IPCC critics—not in every assessment if nothing is new, but over time have done very well. The complaints about coverage have

generally been of two types:

(1) That the content of the criticism is not treated seriously—that is, the critical finding does not seem to affect the conclusion. There are several good reasons for this, including that the criticisms are often not well-developed (that is, ignore other supporting arguments and evidence), have not been confirmed (IPCC is a very cautious organization—getting unanimous agreement of 180 or so countries means that the assessment views change only slowly, awaiting further confirmation—indeed, IPCC clearly lags the cutting edge of science because of this), and that the issue has already been dealt with, in some cases even decades before IPCC (an example here is the claim by Singer and others that the CO₂ bands are saturated, an argument made against Arrhenius in 1897 or so and resolved back in the 1960s). Quite often as well, although the criticism as phrased by the critics seems to be obvious, there are fundamental problems with the premise (e.g., the charge that ‘models are no better than random number generators’ is based on a correlation test of their inability to reproduce pentadal variability over the 20th century utterly fails to understand the chaotic nature of the climate and the limits of predictability of what exactly will happen each pentad starting from a simulation in 1850—while the criticism makes a nice catchphrase, the very careful detection-attribution studies looking at the factors causing multi-decadal changes (so averaging over short-term fluctuations in climate) clearly indicate that models and observations are in good accord, with human influences dominating. When errors of this type are made (roughly equivalent to the late Michael Crichton’s, who said he would put no faith in models until they made accurate local predictions of climate fluctuations at each location for a decade—like climate scientists saying we would not believe in cancer treatment until Dr. Crichton could predict the individual prognosis of every patient in detail for a decade), scientific authors are just so frustrated with such junk that it is ignored. That it might be better to put in a box responding to each and every criticism is just seen as a thankless and never ending task—and I don’t know of any of the critics ever admitting they were wrong (although they have quietly given up on a number of the dumbest criticisms).

(2) That the uncertainties and alternative views are not adequately presented for policymakers in the summary, and that it is the policymakers who should be provided the information to decide who is right and wrong. Basically, this is suggesting that the IPCC effort should not be a critical review, screening out the bad science and giving the collective best interpretation and explanation. In my view, the whole point of the effort is to present the good science that is agreed on, and this IPCC has done, and to do this in the decision framework used by decision-makers (i.e., relative risk or likelihood) rather than in the hypothesis-testing framework that many critics seem to think is god-given rather than a value-based choice of the scientific community (the value being that scientists do not like to be wrong, so what a high degree of statistical confidence); for quite good reasons, society, the business community, and decision-makers rely on their framework so that life can move forward rather than withering in the wait for very high statistical confidence about exactly how much warmer the world will get.

So, my view is that IPCC has done a good job in covering the concerns of the critics, doing so in the context of where the point should be addressed, and in the chapters where very detailed consideration is possible (and there have been extensive discussions of alternative views). I don’t know of any cases where the criticisms of critics has proven the IPCC has overstated key findings, and lots of situations where the actual results have turned out to be more serious than

the IPCC has found—it is bias toward **not** saying what is likely and needs to be known that is the really key challenge for IPCC. Indeed, IPCC was a good bit more cautious on the MSU (microwave sounding unit) controversy and the temperature trend in the troposphere than was the US National Research Council, which to my mind was too quick to accept rather perplexing MSU results when it might well better have waited for the confirmation it called for and that found a number of biases in the MSU (and later radiosonde) data.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

On the whole, I think governments are vital to have involved as it is government decision-makers who must face up to the issue, and involvement in the process helps them understand the depth of understanding, the limitations created by uncertainties, and the many nuances. Were IPCC just a scientific group putting out a report, its findings would not be nearly so influential. However, it is important to understand that this structure and the equating of consensus with unanimity has led IPCC not to come to findings until they are well-established, such that its findings are clearly not at the cutting edge of the science (an observation made clear by how each IPCC assessment has found the climate change issue to be more serious than the previous one (and generally right where cutting edge science would have placed the issue for the previous assessment). Despite the cautiousness of the IPCC process, the popular media portrayal of the IPCC, pushed hard on this by the IPCC critics, is that its findings are ‘green’ and ‘cutting edge.’ To get IPCC better seen as being neutral or cautious, it would have helped if those at the cutting edge on findings were more outspoken, but, in the media (and politics), if a report is being criticized by both sides, then it is seen as being of no value, so, at least until Jim Hansen has prominently been speaking out, most of those on the cutting edge have chosen to be quiet in their criticism, not wanting to be seen as joining the critics in trying to undermine IPCC.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

In my view, the IPCC has done very well in drawing from and considering the peer-reviewed literature. As noted earlier, there is no longer enough space to be actively considering every single paper—not all are of equal merit and this does get considered. Particularly for WG II and WG III, it is important to go beyond the peer-reviewed journal literature. This is the case for several reasons: (a) Given WG II is trying to describe impacts and adaptation practices/options in all regions of the world, not all nations (and not just developing nations) have a tradition of putting all aspects of impacts into peer-reviewed articles—there are agency reports, farmer cooperative reports, news and magazine reports, and lots more that can be very rich sources of information and examples of impacts, and really do need to be allowed to be included—with thoughtful and careful review; (b) With WG III seeking to present information on technologies in fields like energy and agriculture, much of the information can be in company reports rather than in the peer-reviewed literature; and (c) Even in WG I, much of the actual data on observations appears in tables and reports rather than in the peer-reviewed literature, and thus is needed to provide up-to-date maps and charts. Another aspect here is that there are different levels of peer-review, not only in journals, but even for documents like national academy reports—and then

there is no guaranteed review of books, etc. Thus, I think IPCC has to continue to be open to using information and ideas from outside the peer-reviewed journals—but in doing so it has an obligation to do a lot of checking and reviewing of the material used (and so not include it at the last moment) and to ensure that copies of the material are available, not only during the review process, but thereafter (and I don't think IPCC has insisted that the Technical Support Units ensure permanent archiving of the not easily accessible literature).

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

To summarize a few key points from comments on earlier questions:

- (a) In the technical chapters, I think it is not practical to insist that such widely different disciplines as atmospheric sciences and economics use exactly the same approach to presenting uncertainties across all three WGs. It just is not possible—each field has its own long traditions that do need to be followed, but I do not think can be or should be forced into a single system. What is important is for each WG (and maybe each WG chapter) to make clear what its approach is. In coordinating the Government review of the IPCC SAR, we found that WG I was very careful to consider a range of emissions scenarios, of model sensitivities, and the like and considering many complex climate model simulations and historic analogs, etc., came up with a range for the temperature increase in 2100 of something like 2 to 6 C. On the other hand, WG III presented the conclusion that the economic impacts of climate change would be 1-2% of GDP. In reviewing each, it seemed very strange that the economic impact range was much narrower than the range of change in climate. Asking about this, the economic estimate had been generated by using one emissions scenario, assuming a central value for the climate sensitivity, and generating its range by taking the estimates that had been very roughly estimated (or pulled out of thin air) by two different leading economists. There was no way that the economic estimates could be made as rigorous as the climate estimates—but we could, and did, insist that WG III make very clear how it had arrived at its estimate and the various limitations that applied. For the summaries of each of the chapters across the WGs, I think it helpful, however, to work toward summarizing the findings using the IPCC two-dimensional lexicon of likelihood and confidence.
- (b) For the technical summaries, the summaries for policymakers, and synthesis reports, I think there should be an insistence on using the IPCC two-dimensional lexicon, and explaining it in each report (though without footnoting each use of it to the explanation as was done in some of the summaries in the TAR, as I recall).

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I think it is really up to the convening lead authors of IPCC to ensure the accuracy of data and figures (and text) of their chapters and the summaries that then result, and I think this has gone well, with very, very few exceptions. While there may be arguments about the general tilt in the findings, I don't recall a situation where there have been important data problems.

On the issue of rectification of errors, I'd like to see IPCC have a process for dealing with claims

of problems; what I fear, however, is that if IPCC does have a process, it will get abused by the critics claiming all sorts of things such that an IPCC assessment will never be considered done. While the Himalayan glacier melting problem was an unfortunate lapse, that problem really should have been caught in the review process, and I think it most important to make sure the review process is strengthened to deal with that type of problem [the problems should have been caught by the internal review and monitoring that the Technical Support Unit should have been doing, by the WG leadership who somehow missed happening upon this as a highlight, by the national reviews of countries in the region, by the national reviews of major countries outside the region, by outside reviewers and NGOs that had access to the drafts, and more]. While there could be a central submission point for suggested errors, I would think the process for posting them should involve approval by the co-chairs of the WG and the convening lead authors for not just the particular chapter, but for the whole document.

Much more important than some of the minor editors are areas that are changing rapidly and where IPCC assessment reports are found to be out-of-date in important ways. A particular example now is the situation regarding the projected rates of sea level rise, which are far higher just a few years later than in IPCC due to the decision not to try to really quantify the expected contribution from flow of the ice sheets (a problem that carried over from the third to fourth assessments). It seems to me that for such important issue, IPCC needs to plan to have special reports on such topics over the course of the 5-7 year period between major assessment reports. Leaving areas of major disagreements in turmoil for this long seems to me a far more important issue to be addressing than the types of issues that have prompted these reviews.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

A real challenge for IPCC is that it can only officially speak through its formally approved reports and results of its meetings, creating wide gaps in the availability of authorized results. All the rest of the time, the critics are able to stir up trouble without competition except from particular authors or players offering their viewpoints or summary of what IPCC has said. In an ideal world, this would not be a problem, expecting that everyone would just dismiss critical comments until the next assessment came out. In the high pace media world, this approach has serious problems, though not ones easy to resolve, especially in that what the news media want is something new and controversial and not dated and well-established, or at least the media want a quick official view on new literature [last summer, UNEP director Achim Steiner presented their new summary peer-reviewed report on climate change, based on IPCC and some updates, and the media basically decided the story instead should be about a late summary of prospective emission cutbacks prior to the then upcoming Copenhagen conference—it was very unfortunate]. At the same time, virtually all the IPCC authors and leaders have other jobs that they cannot continuously just put aside if they are going to accomplish what they need to get done in order to promote their career. And having IPCC have a press department and/or significant permanent staff of scientists would, it seems to me, be seen as an advocacy effort that would be criticized because it should not be needed.

A suggestion. I think IPCC should consider providing a program like the military does that embeds one or a few reporters (maybe one per continent or two per chapter) in the process.

Quoting exact text, discussions, or individuals would not be allowed, but general summarization of what is going on and major points and issues being considered and debated would be allowed, even encouraged, so the public gets a sense of what is being done and how the process is working every several months from each WG. This would require altering the IPCC's interactions with the media, and open up the process during some tough discussions in a way that I think would be very helpful, even though it would require some adjustment.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Overall, I think that moving to the Web should likely be attempted for the Sixth Assessment Report, having a quite high level overview summary that is supported by a lot of detailed information, much drawn from previous assessments and new or updated material as needed, under each general topic. If done creatively, it might well be that this underlying material could be set up in a Wikipedia format and generally updated over time with the chapter convening lead authors being the editors, and perhaps having a section where not accepted information would be parked in case people wanted to check. But, this should probably be tried first with a Special Report rather than changing the existing IPCC report with out some trial runs.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

I'll pass on responding to this question. All earlier comments are all my own.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Participant in a Scoping Meeting, Lead Author, Review Editor of the Synthesis Report. Also participant in a Scoping Meeting for a special report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

strengths

1. Selection of experts for scoping process based on scientific excellence and balanced scientific domain, geographical and gender representations is better coping with a holistic approach needed when dealing with climate issues. Also, the balance between the number of former participants and newcomers in the process is a sound procedure to maintain the robustness of it and to enable its openness and flexibility to new directions.

2. Every time an IPCC process is initiated for a new report a new "architecture" is proposed by the new team; this happens without opening unnecessary gaps to keep apart the present and previous report approaches; so, there is a balance between what has been accomplished and

innovative approaches that keeps the continuity and effectiveness of the IPCC process.

3. The scoping process as it is now usually succeeds to deliver a global architecture of the report solid enough to support an original approach, at the same time providing sufficient room to comprehensively populate the designed architecture with required knowledge in the assessment process.

weaknesses

1. Not enough harmonization of policy making issues with scientific questions; it's not a particular fault due to a particular treatment but rather more fundamental methodological challenge due to relations of researchers to their studied issues in science and in policy making; on the other hand, there are also problems due to dynamics of knowledge generation in science and the timing of its transfer to policy making in the changing system.

2. Conventional treatment of knowledge transfer from WGI to WG3; in my opinion the scoping process needs to investigate new ways to transfer knowledge between IPCC working groups. In my opinion, producing a separate synthesis report in a distinct thread of the IPCC process is not enough in this regard.

Recommendation: perhaps the use of instruments such as FAQ sections and synthesis boxes in all WG volumes to integrate some natural and socio-fin-econ questions, rather than separately deal with them, could help in improving the knowledge transfer from WGI to WG3; so, the synthesis report would become a more effective integrator of climate related knowledge from WG1, WG2 and WG3.

3. Not enough room in the report for explicit coupling climate uncertainties with socio-economic ones; I think that an important mission of scoping process should be to design multidimensional integrative frameworks for questions and answers delivered together by natural and socio-fin-econ sciences.

Recommendation: perhaps the synthesis report could dedicate a section to the present view of how climate and socio-economic uncertainties are coupled to each other and how knowledge could be practically used in this regard.

2b. Election of Bureau, including Working Group chairs

I think it's ok.

2c. Selection of lead authors

strengths

I think that the selection of lead authors based on scientific excellence and balanced representation of scientific domains, geographical locations and gender is strength of the IPCC process. Firstly, it is coping with the multidimensional approach of the climate change issues. Secondly, this selection addresses the importance of knowledge projections to regional and local scales to reach local communities. Also, it improves knowledge transfer among scientists which is important for both scientific community and general public.

People working in the IPCC process tend to become dissemination centers of updated climate change information for local media and general public, so having a global coverage of lead-authors will also make easier the knowledge transfer worldwide, beyond social, economic and gender barriers. Also, the balance between the number of former participants and newcomers in the process is a sound procedure to maintain the robustness of it and to enable its openness and flexibility to new directions.

2d. Writing of working group reports

strength

I think the present procedures which drive the writing of group reports are enabling comprehensiveness of peer reviewed findings and openness to comments from virtually all interested in climate change issues. It's important that a group report is not a collection of scientific findings but an assessment of the present state of knowledge with its associated limitations and perspectives.

2e. Review processes

strengths

It is well designed, in my opinion. The fact that successive drafts are open to expert comments from outside the IPCC team is remarkable. It's worth mentioning that the responses to all these comments are publicly available. The role of designated review editors for group and synthesis reports is important checking how the writing team responds to the expert comments.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

strengths

The process is technically well designed, in my opinion.

weaknesses

In my opinion, only producing a separate synthesis report in a distinct thread of the IPCC process could not be enough for an effective knowledge transfer between working groups to give best answers to policy questions.

Recommendation: I think there is room for improvement of working group interaction during writing the group reports. In my opinion, we should explore more ways to bring together WG1, WG2 and WG3 than writing the synthesis report. Uncertainty treatment and its impact on policy questions could be an unifying theme throughout all group reports.

2g. Adoption of report by the IPCC plenary

weaknesses

The political involvement when the report is adopted by IPCC plenary is too strong, in my opinion. We have a report with scientific facts that should be judged in its substance by experts. The report should be viewed as an instrument for the decision makers to take informed decisions for the public interest. At most, the IPCC plenary should examine if the writing team correctly

followed all the approved procedures and if the report is technically responding to IPCC plenary questions. The IPCC plenary should not make judgments on scientific responses, but rather on technical and methodological correctness of the process.

2h. Preparation of any special reports

strengths

Special reports are needed and they are opportunities to explore new ways of harmonizing policy and scientific questions. These new approaches tested in special reports could be further used in the more complex process of writing IPCC assessment reports.

3. What is your opinion on the way in which the full range of scientific views is handled?

I think IPCC process is well designed to cope with scientific diversity. As a participant in the process I was amazed to see how the report objectively emerged from such a wide range of the individual scientists with distinct personalities and particular views on particular subjects. In my opinion, IPCC process succeeds to effectively use the scientific community principles and its value system. That is why the response of so many individual scientists with particular views on particular subjects is so coherent and sound.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I think that the governments should formulate the policy question, control the technically conformance of IPCC process and use its findings in order to make informed decisions. Governments are not entitled to make value judgments on scientific responses. Their role and expertise is to use that scientific responses in decision making activity for which they were delegated by the citizens.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

In my opinion, the IPCC should avoid as much as possible to include non-peer-reviewed literature. Furthermore, the fact that a study is peer-reviewed doesn't mean that everything is scientifically ok with it and/or it is useful for the assessment. That is why we need expert judgments in the IPCC assessment. Assessing non-peer-reviewed literature could be time consuming with fuzzy results.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

It is a core issue, in my opinion. It's desirable to have a unique framework to express uncertainties for all 3 working groups but at this moment this could be too much of a request. A more realistic approach would be at least to explicitly couple climate uncertainties with socio-economic ones (i.e. to find a coupling methodology). I think that lead authors should discuss this

issue during the whole process of elaborating the group reports, not only in the synthesis report. The synthesis report could dedicate a special section on how climate and socio-economic uncertainties are coupled to each other and how knowledge could be practically used in this regard.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I think that identification and rectification of errors are properly handled by detailed peer-review mechanism acting during the process (draft versions are checked by governmental and nongovernmental experts, the lead-authors publicly responds to all comments, review editors are checking the whole comments/response loop etc). As for the data quality assurance and quality control, I think that here is the role of the requirement to include only peer-reviewed literature in the IPCC assessment. Rectification of errors discovered after publication is (and should be) made using academic rules. The news that made recently headlines of newspapers worldwide have not taken into account that the discovered IPCC errors were spotted by IPCC scientists and treated following academic rules. I think that in order to minimize the errors, lead-author should be encouraged/asked to comment the other working group draft versions as much as possible.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The communication with media is a difficult issue. Sometimes the journalists don't understand the difference between policy and scientific issues, the role of scientists and policy makers etc. I think a good approach would be to encourage each participant at IPCC process to contact its national/local journalists interested in climate change issues to disseminate climate related information and details about the structure of IPCC process as often as possible.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I think that IPCC process is successful model of using scientific community resources to cope with global problems having impact beyond the researcher's work environment. Yes, I think it's a sustainable process and I expect that other scientific communities would follow this model to build their own assessment of knowledge relevant for society (e.g. medical world where there are debatable issues of how research impacts the society under economic constraints; pharmaceutical research and ethical issues etc).

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

No, I don't have at this moment any other suggestions.

11. Any other comments

No, I don't have at this moment any other comments.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead Author, Review Editor

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

I have had no involvement in the scoping process, but the outcome seems to be too many, often overlapping, policy questions, resulting in longer reports, duplication of effort by authors, and a greater risk of eventual inconsistencies. Most of the impact of IPCC Assessments revolves around a very small number of questions: how is the climate changing at the global level, to what extent can these changes be attributed to human influence, what further changes should we expect and what will it take to avoid them?

It is clearly impossible for a single organisation that is dependent on the voluntary efforts of individual scientists to address the full range of climate-related policy questions at the level of detail that governments are interested in. This particularly applies to impacts of climate change, because these are so region-specific. I believe the majority of the problems (which, it must be stressed, have been heavily exaggerated in the popular press) identified in the 2007 Assessment represent symptoms of an over-extended scope. It is impossible for a single international assessment to write in detail about climate change impacts in individual countries: this is the job of national assessments. If the IPCC attempts to do this, mistakes will be made, and these will undoubtedly be used to undermine the entire process.

What the IPCC can and should do is assess the evidence at the global level and set standards for national assessments. For example, if substantial funds are to be made available for adaptation, countries will have to agree on how to distinguish the impacts of anthropogenic climate change from the consequences of natural climate and weather variability. At present, there is no agreed method of doing this, and problems will arise if different countries adopt different standards. An international body is clearly required to referee this process, which is a role to which the IPCC would be ideally suited.

2b. Election of Bureau, including Working Group chairs

It would help if the election process were somewhat less opaque, but I appreciate the constraints.

2c. Selection of lead authors

As b.

2d. Writing of working group reports

The writing process seems to work well, but as the nature of IPCC reports has evolved from essentially a pure literature survey to a much more targeted exercise addressing specific questions, the burden of preparing figures for reports has grown very substantially. In early reports most figures were simply drawn from the literature: now, because of the importance of ensuring that all models entered into the CMIP assessments are included, they generally have to be prepared specifically for the IPCC reports. The IPCC does not have adequate resources to do this, so it falls to the voluntary efforts of individual scientists, representing a severe strain.

This situation is likely to worsen substantially as figures are increasingly subject to “audit”. No one has, to my knowledge, ever audited the true cost of IPCC reports, including the effort contributed by individual scientists. Among the many calls for procedures to be “tightened up”, there is no discussion of cost-benefit analysis. The cost of ensuring there is not a single error or misplaced reference in a multi-thousand-page report is very substantial, and governments need to address the question of whether it is worth it. Ultimately, taxpayers pay for the time of the vast majority of scientists, so it is important for taxpayers, not just for scientists, to ensure that the scientists can focus on what they do well, rather than mechanical auditing and updating of figures.

2e. Review processes

Again, there has been no attempt at cost control, so this process has become steadily more unwieldy.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

I personally do not understand why we need a Synthesis report. The individual working groups produce summaries for policy makers. It is clearly important to ensure the different working groups use similar approaches where appropriate and use common language in similar ways, but if discrepancies emerge, it is too late to fix them at the Synthesis report level because individual working group reports have already been approved. Hence the synthesis report could be replaced by a simple concatenation of the summaries of the individual working groups, which would not require further review or approval, substantially reducing costs. If this is to be done, it is important that working groups convene earlier, with at least one large LA meeting spanning all three working groups, to ensure they are addressing common questions using a common language.

2g. Adoption of report by the IPCC plenary

I have always been surprised that this process works at all (having only had direct experience of it in the context of Working Group 1), but it does, in that the resulting summaries for policymakers end up both readable and authoritative. The status of the Technical Summaries seems less clear, although many of the resulting documents have been very useful. Since individual chapters all provide executive summaries, reports could be significantly simplified by eliminating the Technical Summary layer. If other organisations wish to produce summaries of

IPCC reports that are more comprehensive and reader-friendly than the SPMs, they should be encouraged to do so, but without a specific IPCC endorsement.

2h. Preparation of any special reports

Again, although individual Special Reports have been very useful, reflecting the very substantial work put into them by individual authors, it is not always clear why the IPCC needs to be involved. If governments or UN bodies want reports on specific issues, they can commission them. It is unclear why these need to be “IPCC-branded”.

3. What is your opinion on the way in which the full range of scientific views is handled?

My experience is that authors are very careful to take account of the full range of scientific views at both the individual chapter and summary levels. There is clearly a tension between a realistic and useful assessment and a comprehensive review of every paper published on an issue. It was always made very clear to us, as authors, that our job was to assess the science, not simply review it. Hence if chapter authors believe a paper is flawed, they must have the authority to say so and exclude it from their conclusions. My experience is that if there is any doubt over whether a paper should be cited, the default position is that it is cited, which is as it should be.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments have unrealistic expectations of the IPCC, often using the IPCC as a crutch to avoid making decisions themselves. In the preparations for the UNFCCC meeting in Copenhagen, it was frequently claimed that “the science dictates” that various policies should be adopted, when, of course, the science did nothing of the kind. It would be undesirable, and highly undemocratic, for a group of unelected scientists to dictate climate policy. While the IPCC can help inform climate policy, there is ultimately no substitute for governments acquiring the expertise and understanding of the issue to formulate policies for themselves.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

In Working Group 1, it has never, in my experience, been necessary to rely on non-peer-reviewed sources, with the exception of the need for dedicated figures mentioned in 2d. It would clearly help if future assessments were to adopt stricter standards for confining attention to the peer-reviewed literature. I appreciate that this introduces a problem of geographic bias, particularly in the assessment of impacts of climate change, but the solution is for funding agencies to support peer-reviewed research in under-assessed regions of the world, not to relax standards of peer-review for these regions.

Journal editors clearly have an important role to play here, and the vast majority discharge it responsibly, despite limited resources (many are largely unpaid). There are, however, exceptions: some editors have publicly stated that they have an explicit brief to provide a forum for

contrarian views. I am personally aware of cases when papers have been published against the recommendations of all the referees because the editor feels they are interesting and controversial.

The problem is that there is no certification system for scientific journals. Anyone can set up a journal, claim to adhere to peer-review procedures, and demand that the IPCC consider all the papers they publish. The status of open access, open review, journals is also problematic. It is hard to see what the solution is here. One option, which would undoubtedly be controversial, would be for IPCC authors to score papers they review in terms of their reliability and utility. Statistics could then be compiled and published on the reliability of papers published in different journals, which would at least provide journal editors with an incentive to be more careful. Impact factors are an inadequate guide, since the problematic journals typically have such low impact factors that they are dominated by citations criticising controversial (which often can mean unreliable) articles.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The situation is improving, but in the Fourth Assessment cycle, inadequate attention was paid to the distinction between the estimated robustness of uncertainty estimates and the uncertainty estimates themselves. In my view, the enthusiasm for quantifying uncertainty has gone too far: authors should not feel obliged to assign a “likely” or “very unlikely” qualifier to every possible statement when such a quantitative assessment is not supported by the literature.

A much clearer distinction should be made between well-understood uncertainties, such as estimated standard errors in observations or the contribution of internal climate variability to recent trends, and uncertainties arising from our lack of understanding of essential processes, such as the risk of accelerated sea level rise over the 21st century. The first category clearly should be represented quantitatively, but very often the second category cannot, and authors should not feel obliged to tie themselves in knots to do so.

This distinction between these types of uncertainty was made in papers following the Maynooth meeting on uncertainty in 2004, but was not widely adopted in AR4. I am hoping the forthcoming meeting on uncertainty language will help.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The review process has become so bureaucratic and cumbersome that it is probably less effective at identifying errors than it used to be. Clearly the IPCC needs a process for publishing errata, but my impression is that this process already exists (I certainly see corrections appearing on the IPCC web site), so it may be more a question of speeding it up and making sure people are aware of it.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The IPCC was set up to inform governments, not the public. It is not clear that the twin roles of an authoritative source of governments and a popular-science source for the media and general public are mutually compatible. I have heard no evidence of any government agency, the original and intended audience of IPCC reports, actually being misled by mistakes in the IPCC 4th Assessment regarding the date of disappearance of Himalayan glaciers or the fraction of the Netherlands below sea level (one assumes the Dutch planning authorities are aware of this number, and Indian planners would also consult the chapters specifically on glaciology if they were concerned by the Himalayan number, and hence notice the discrepancy). Nevertheless, it is clear that it is necessary to be much more careful than some AR4 chapter authors were in material provided to journalists, since journalists have an incentive to pick out the most exciting-looking statistics and no incentive to check them, which means that errors are quite likely to be propagated. The only solution is for the IPCC to say much less, as proposed below.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The “IPCC community”, meaning the authors involved in IPCC reports as well as the IPCC itself, has, in effect, evolved from a panel assessing the literature on climate change to an active commissioner of research on behalf of governments. This is particularly evident as successive IPCC reports move ever closer to providing actual climate science services.

The Atlas of Regional Climate Change in the forthcoming 5th Assessment is an example of this trend: this will contain vast amounts of information on individual regions which will undoubtedly be very useful to governments provided they understand its limitations, but ensuring and maintaining the quality of this information, and keeping it up-to-date, will be a truly herculean task that would challenge the most well-resourced national climate research programmes. How it is to be done on an essentially voluntary basis by an international panel is not clear to me.

The more the IPCC focuses on specific impacts in specific regions, the fewer people actually check the statements that are made, and the greater the risk of errors that undermine the entire process. It is no coincidence that many of the errors in the 4th Assessment emerged in regional case studies: these case studies should simply be stopped. If governments want case studies, they should commission them individually.

The solution I would advocate is a radical reform through the adoption of a clear “subsidiarity principle” for the IPCC. The IPCC scope should be limited explicitly to issues that can only be addressed at a global scale. IPCC authors and the IPCC Bureau should be empowered to reject any request from governments to make statements that are only relevant to individual regions. Adequate resources would need to be made available to allow developing countries to perform their own climate change assessments, but governments should not be lulled into thinking they can perform these just by looking at the latest IPCC report.

This would not, of course, preclude the IPCC from assessing the evidence for phenomena that occur predominantly in one country but which would have a global impact, such as Amazonian

die-back. Furthermore, it would continue to be the role of the IPCC to set guidelines for performing national assessments, to ensure governments use common language and common standards. But for the IPCC, in effect, to attempt to do these assessments on behalf of governments is completely unsustainable.

If the IPCC's brief were explicitly restricted in this way, reports would be very substantially briefer. All information on region-specific impacts, and region-specific mitigation options, would go, potentially resulting in a single report spanning all three working groups. The summary for policy-makers and final plenary approval session would have to be longer, but since many of the same government delegates currently have to attend four plenary sessions (three working groups and a synthesis report), a single longer plenary would substantially reduce the cost and carbon footprint of the whole process.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

See 9.

11. Any other comments

Apologies for returning this response slightly late.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Government focal point

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

So far the scoping process and identification of policy questions have been effective and well managed.

2b. Election of Bureau, including Working Group chairs

All candidates should be present at the IPCC plenary session for the bureau elections. Also their CVs should be made available to governmental representatives by email or web enough time before the session in order to allow an adequate assessment of the candidates.

The candidates for IPCC Bureau members should be assessed by means of their scientific excellence, management/communication skills, very good knowledge of English language and teamwork ability.

In order to assess the scientific excellence of WG1 Bureau candidates, their CVs need to include the “h-index” (which is based on the set of the scientist's most cited papers and the number of citations that they have received in other people's publications). For WG1 related science this h-index is an adequate and worldwide recognized tool to assess scientific competence and work. This h-index can also be used, with more caution, for WG2 Bureau candidates, but not for WG3 Bureau candidates, since the h-index is not quite adequate for the economical science.

2c. Selection of lead authors

The scientific excellence along with a correct balance between geographical and gender issues need to be the main elements to drive the selection of Lead Authors. Again the WG1 Lead Authors need to be assessed also by using the h-index. It is recommended to have the secretariat making public on the web-site the h-index of all LA selected for the WG1 reports.

It is suggested to increase the fully transparency of the process of selection of Lead Authors and this process should be under the responsibility only of the WG's Bureau and not of the IPCC Chair and IPCC Vice-Chairs. Also the procedures of selections should be very similar and consistent among the different WGs.

Finally, the same scientists should be kept in any role (CLA, LA or RE) only for two subsequent IPCC Assessment reports.

2d. Writing of working group reports

It is recommended that at least three Review Editors should be for each chapter of IPCC reports. Also IPCC should explore ways to increase the visibility of the role of Review Editor. In general, the Review Editors should be chosen among senior scientists with experience of being editors in scientific journals.

Finally it is suggested to enhance the usage by the authors of IPCC reports of the peer-reviewed literature in languages other than English.

2e. Review processes

Cooperation and consistency between the WGs needs to be strengthened by keeping WGs informed of each other's plans, activities and recent findings. Also there is a need to establish a longer term mechanism among WGs aimed to carry the cross-cutting topics through the development of the IPCC Assessment Reports. In this regard the WGs Bureau should organize Joint Expert Meetings in dealing with cross-cutting topics across WGs. Some Lead Authors, should be appointed as “bridge authors” in order to keep the linkage among the different parts of the reports.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

The Synthesis Report (SYR) is valuable to decision-makers and stakeholders, because the SYR

presents an integrated view of the science that cannot be achieved by reading the individual WG's reports and also provides a brief overview of the topics covered by the Report. It is recommended always an early start to the SYR, including consideration of it by authors and governments during the scoping process, so that sufficient material is available in the WG contributions at the time of synthesis.

2g. Adoption of report by the IPCC plenary

In general, the adoption of the reports at IPCC plenary sessions is a well managed process, but is dependent on the WG's Chairs organizational skills.

2h. Preparation of any special reports

The process for the preparation of Special Reports is adequate.

3. What is your opinion on the way in which the full range of scientific views is handled?

The range of scientific views is handled in an adequate manner by the Lead Authors with the support of Review Editors during the preparation of IPCC reports.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The primary role of the IPCC is to provide policy-relevant but not policy-prescriptive information on climate change to stakeholders, especially governments. In addition IPCC is the provider of scientific information to the UNFCCC (UN Framework Convention on Climate Change). All these roles should be maintained and reinforced.

The role of governments is essential to the IPCC process: the governments provide a mandate to the available scientific community to update them on scientific issues relevant to the policy, and at the end the governments accept and approve the IPCC reports and SPMs. *“By endorsing the IPCC reports, governments acknowledge the authority of their scientific content. The work of the organization is therefore policy-relevant and yet policy-neutral, never policy-prescriptive.”* (from www.ipcc.ch).

It is suggested to enhance the ways to disseminate information to a larger public including the media about the role and objectives of IPCC, since a wrong understanding of IPCC is still spread out among scientists from other scientific areas, media and the general public.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The main issue is finding best balance between providing always some scientific content regarding one issue (by also using grey literature, if peer-reviewed literature is not available) or leaving that issue with only gaps and research needs.

The grey literature should be avoided in WGI, since peer-reviewed publications are available. In the WGII and WGIII the grey literature can be used but applying seriously the existing IPCC rules (Annex 2 - Procedure for using non-published/non peer-reviewed sources in IPCC reports in “*Appendix A to the Principles Governing IPCC Work - Procedures for the preparation, review, acceptance, adoption, approval and publication of IPCC Reports*”).

IPCC should specify in a better way different categories of grey literature. When using grey literature the IPCC authors should prefer non-peer-reviewed governmental reports and UN reports based on peer-reviewed literature.

The grey literature should be clearly highlighted in the IPCC reports and in the SPMs. Finally it is suggested the possibility to organize some expert meetings or workshops aimed to particular assessments of some of the grey literature around topics relevant for AR5.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The IPCC process on estimating uncertainties with likelihood and level of confidence is quite adequate.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The process of handling errors after publication should be transparent and very clear to the public. When errors in IPCC reports are detected and assessed, a corrigendum should be published on web in a short time. If errors are found in SPMs, the correction should be managed in IPCC Plenary Sessions.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The events happened in the last months have evidenced some weakness in the way IPCC communicates with the media and general public. It is suggested to hire professionals, which can organize a strategy in communication and prompted responses to the media. Furthermore, it is suggested to organize training sessions regarding effective scientific communication for WG’s Bureau members and Secretary of IPCC in order to make more consistent and organized the quality and contents of communication of IPCC,

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

IPCC should follow the rules of other international organizations such as WMO and UNEP.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

No direct participation – no view on this item.

2b. Election of Bureau, including Working Group chairs

No direct participation – no view on this item.

2c. Selection of lead authors

Lead authors of my section were undoubtedly world leaders in research, and were balanced across continents and major research institutes in the field.

2d. Writing of working group reports

Writing of the chapter of which I was a part was dominated by the leading authors – as might be expected. The team members from the developing countries (including myself) were made to feel welcome and accepted as part of the team. In reality we were out of our intellectual depth as meaningful contributors to the process.) Despite this, I am not suggesting that the process of including developing country scientists should be changed – from a point of view of strengthening scientific community, the learning experience of participating in high level science, and from the point of view of political legitimacy, the process of inclusiveness has great value to the IPCC.

2e. Review processes

Review of the individual chapters I believe was rigorous – conducted by persons other than the drafting team.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

No direct participation – no view on this item.

2g. Adoption of report by the IPCC plenary

No direct participation – no view on this item.

2h. Preparation of any special reports

No direct participation – no view on this item.

3. What is your opinion on the way in which the full range of scientific views is handled?

For the first two or three reports fine - for subsequent reports I consider that specialization on emerging areas or areas with significant uncertainties are more important than full range coverage. Such specialization should allow also for occasional wild-card entries of topics, so that the content is not dominated by the existing entrenched participants – individual and institutional.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The right of governments to review and alter or recommend inclusions or omissions from the reports and more particularly the summary reports detracts from the scientific credibility and opens the whole process to perceptions of political bias.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Key aspects on quality control of the whole process is in selecting a panel of diverse experts – scientist involved also in editing and reviewing of the journal literature in their normal course of business and who are thereby exposed to reading results also of scientists outside of their own networks of collaboration. These experts will select the seminal information, mainly from the formal literature, but are also more likely to be aware of grey literature or emerging results not yet in the open literature. This is part of the self-organizing process of living science – formalized IT driven reviews of all literature of a given topic will not add value above that obtainable by the Delphi-type committees assembled to address the various chapter topics.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

In the committee in which I participated, the uncertainty estimation processes were debated vigorously. This was one of the most difficult aspects of the whole process. Again, given that the jury was required to come up with an uncertainty estimate for each forcing mechanism, Delphi-like process was followed. Process could be improved by explicitly allowing for any strong dissenting voice to be recorded as a minority view with alternative value and or reasons for objection – in this way the process is self-regulating to propagate elements of doubt through the whole process. Science is not democracy where sufficient consensus carries the day and dissenting views are then suppressed.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Through the processes of successive refinement and abstraction, certain themes or ideas gain prominence and greater importance. The higher level of influence of ideas taken as *leitmotifs* in the later stages should require a higher level of scrutiny. Was this done in previous reviews. The level of confidence of a normal scientific paper put into the journal literature as part of the ongoing intellectual conversation is not necessarily written to the same level of rigour required to justify the weight of an IPCC major conclusion. Reverse quality assurance to the level of the original articles should be carried out for major IPCC findings, by IPCC scientists other than those responsible for forward progression of the finding.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Fine until there was dissent. The only valid and immediate response to challenges to findings and processes is full openness and granting access to findings, minutes, processes and if requested, access to original data for reanalysis by whomsoever. This is the basic scientific method.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The repetitive process of an entire review at five year intervals has become burdensome to the key scientists, many of whom would prefer to remain doing science rather than sitting in committees. One result is that eventually the B-team or C-team are nominated to serve, while the A-team stays at home to do the work. The process could also lead to a new profession of IPCC committee participant, where participation in the process subsumes the scientific creativity and stagnation of views feeding into the reports.

An alternative would be to focus on key areas of uncertainty or emerging areas of science, so that the reports are fresh and focused, rather than being encyclopaedic, repetitive, and with mostly minor incremental changes. Currently the influence of black carbon appears to be one such area. Sub-regional nesting of global climate change models, and secondary effects of sea surface temperature changes in oceans other than the Pacific, are further areas where refined interpretations and useful new information can be generated. The current process of the IPCC has elevated global climate model outputs to a level of authority that the modelers themselves cannot be comfortable with.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The funding could with advantage be focused on intensive topic related reviews, with dedicated teams paid full time for short periods, rather than the spend on the current broad-based review covering the entire field at regular intervals.

11. Any other comments

The projections of GHG increases in the atmosphere should be explicitly balanced against projections from the energy community on the total recoverable reserves of fossil carbon – based on net energy return on energy invested rather than on technological innovation potential.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead author, Coordinating Lead Author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

The Third Assessment Report included a definition of policy questions at the outset, at least for WG II, and produced a report that summarized answers to those questions (although the process was not focused on those questions). AR 4 did not do so – and was not directly related to policy questions.

2b. Election of Bureau, including Working Group chairs

A mystery to most of us, including the functioning of a Secretariat that seems only marginally connected with much of the leadership.

2c. Selection of lead authors

Varies with the styles and personalities of the WG leaders. Erratic and uneven in WG II AR 4, but being handled very, very well for WG II in AR 5. Predictably affected by pressures on the bureau from particular governments to involve particular people. Typically, in an author team of two CLAs and seven LAs, three of the LAs will be non-performers....

2e. Review processes

Generally very thorough and systematic. In fact, more than half of an author group's time over a period of 3-4 years is spent responding to reviewer comments, not doing and writing the assessment per se. Recent controversies indicate that, in WG II, reviews of the regional chapters are sometimes not as rigorous as reviews of topical chapters – and experts in the topical chapter teams are seldom involved in reviews of the respective sections of the regional chapters.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

These are two different things. Each WG does what is called a summary for policymakers, which is reviewed in the final plenary session of the WG process. The policymakers consider it a

summary BY them for their governments, not FOR them by the scientists, and they must sign off on every single sentence in the document. Months after that, a synthesis report is prepared by a couple of dozen leaders, CLAs, and LAs, which in AR 4 included some materials from WG II that had been deleted at the plenary....

2g. Adoption of report by the IPCC plenary

For WG II in TAR and AR4, this was an agonizing, frustrating process, as every sentence had to be wordsmithed on a screen in front of representatives of more than 100 governments, falling farther and farther beyond a realistic schedule by the hour. In Brussels in 2007, the process ran all night on the two final days. There must be a better way.... One problem, by the way, was that the governments did not get the proposed summary for decisionmakers far enough ahead of time to submit their comments in writing before the plenary; so that open meeting was their first opportunity to get concerns off their chests.

2h. Preparation of any special reports

This is often the strength of an IPCC cycle: an opportunity to assemble a group of the world's top experts on a significant policy (or science) question to address the relevant issues. Some people think that this should be the main focus of IPCC rather than the encyclopedic periodic summary reports, but the inertia of past practices is overwhelming.

3. What is your opinion on the way in which the full range of scientific views is handled?

This is often handled more through review processes than through the author selection process. The author selection process is shaped more by what is known about the personalities of individuals (and their willingness to join in a group process) than by a person's views as a scientist; but in effect prickly people on the margins of the current consensus are often excluded – included only via their review comments.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I think that involving them at the initial scoping stage and then excluding them until the final plenary, except for the two final rounds of reviews, is a mistake. There should be more interactions along with way, as long as they are public enough to guard against perceptions of political pressures.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Historically, the IPCC assessments – including the several rounds of expert and government reviews – do a really good job of summarizing the mainstream peer-reviewed literature published in print in English. The current challenge is that the information environment for scientific knowledge is changing rather rapidly. For example, many important sources are published (or

otherwise made available) only electronically, where review processes are often unclear. Many of the most important new assessment reports are published by government agencies, NGOs, or other “gray” literature sources. Much of the emerging knowledge from the developing world is not finding its way quickly into peer-reviewed published literatures. IPCC criteria need to be reconsidered in light of these changes.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I think this is somewhat problematic. First, each time, the IPCC prepares guidance that does in fact affect the use of terminology related to uncertainties and levels of confidence. Authors pay attention and do their best. But it is virtually impossible to unravel uncertainties embedded in source documents, and most of the statements about levels of confidence in findings and conclusions are qualitative group judgments in the spirit of the NAS “analytic-deliberative process,” probably not easy to defend if challenged. I’m not sure one can do any better, but IPCC pretends that it is more scientific in this regard than is the fact. Second, historically, concerns about uncertainty have tended to drive out discussions of “fat tail” contingencies that, while not more than 90 percent likely, are more serious issues than most of the outcomes that are very likely.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

There are two parts of this: QA regarding input data and QA regarding data in the reports. Both depend heavily on the review processes to catch errors that invariably appear in reports that are so massive, produced largely by teams composed of part-timers, overseen by small staffs.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I think that, in this era of IT, trying to act as if all draft materials and internal communications are “confidential” is ridiculous. I think it is time to open up the process, talk more openly about what is going on, and let openness protect integrity rather than sometimes letting confidentiality seem to protect departures from integrity.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Again, please see the Aspen paper – but I think the secretariat arrangement is a clear problem. What should be its role, accountable to whom, reviewed and evaluated how and how often, etc.?

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead Author, Coordinating Lead Author, Author (Technical Summary, Summary for Policymakers), Contributing Author, Reviewer. Also author of a special report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

[Virtually all the comments below pertain to WGI experience]

2a. Scoping and identification of policy questions

Strength: Dedicated meetings take place prior to the start of the Assessment (2 in AR4) to scope out and identify the key scientific points, including policy-relevant ones. Similarly, WGII and III scoping meetings identify the points to be addressed in those reports.

Weakness: The meetings, owing to logistical considerations, accommodate only a handful of experts. There is too much time spent in achieving a holistic scoping at these meetings which takes up valuable time. In order for these meetings to be more tightly focused in the short time available generally to most, one suggestion is that a couple of rounds of written exchanges take place prior to the meetings so that, at the meeting itself, the highest-order challenges and cross-disciplinary issues can be focused on more deeply.

2b. Election of Bureau, including Working Group chairs

Strength: The bureau is generally a collection of acknowledged experts who are elected on the basis of their accomplishments and expertise.

Weakness: The process by which this occurs is not transparent even in the scientific community. Who are these people that select LAs is a frequent refrain. The process should be more open.

2c. Selection of lead authors

Strength: WGI selection process and the selected persons are regarded very highly and do not generally contain questionable selections. On the other hand, not every expert can be invited.

Weakness: The need for balance of various kinds tends to assign greater responsibilities to a few, especially in certain chapters. My own experience has not seen this kind of problem with my chapter/section, but I have evidenced it for other chapters.

2d. Writing of working group reports

Strength: IPCC WGI assessment is a collective responsibility by the experts assembled, and this shows through in the chapters. The beauty of the process, including the review and response phases, is how these elements succeed in carving out the state-of-the-art from the literature, in

the process building a firm knowledge base.

Weakness: The actual Chapter writing process, beyond the principal findings, is tedious and wearisome. It usually exhausts the participants as they wind through the four separate sets of reviews and responses. While depth in the Chapters is undoubtedly needed to substantiate the findings, there tends to be several instances of merely literature survey. Chapters in some places tend to be less discriminating and lean towards a review rather than an assessment process.

2e. Review processes

Strength: Far and foremost, the IPCC climate science represents one of, if not, the most rigorous practice for shaping the state-of-the-art. Because of the large number of reviewers drawn from different areas in climate, and practically from all around the world for the four rounds of reviews, the principal findings are worded very carefully with appropriate caveats and assumptions.

Weakness: The process is cumbersome. Because of the hectic pace and the strict time lines, some comments at the Chapter level are not handled in a substantive manner. As no research can be done alongside the Assessment, some good comments requiring additional research have to be left as incomplete in the ongoing Assessment. There is also no way to filter out non-substantive comments; these needlessly consume the time and energies of the authors, nevertheless authors are forced to attend to virtually every one of them by virtue of the protocols in place.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Strength: The process of focusing first on the Chapters and then drawing out material to form the essence of the SPM has worked very well. The Plenary process for SPM emerges as a satisfactory affair even if it looks tortuous in the intermediate stages.

Weakness: A weak component is the construct going into the Synthesis Report (SYR). Since each of the WG reports are approved by full-fledged and independent Plenaries, the Synthesis material should be essentially the SPMs of the 3 WG SPMs. But, if the SPM material has to enter into the SYR unchanged, what makes this different from literally stapling the 3 SPMs together? The IPCC dilemma is that there is a perceived need to present a synthesis of the 3 SPMs but without introducing new science or interpretations, in order to maintain the sanctity of the 3 SPMs and avoiding reopening formal review processes associated with the material in any of the 3 WGs. Extreme care needs to be taken to protect the rigors of the 3 WG processes and avoiding corrupting their findings, yet presenting a coherent sum of the 3 parts. One easy solution is to drop the idea of a SYR but the Parties will find an alternative around this proposition.

2g. Adoption of report by the IPCC plenary

Strength: It is impressive how the process arrives at unanimous acceptance by all the countries. This is a tribute to the rigor of the process and the hard work put in by every participant in the IPCC process.

Weakness: There inevitably tends to be compromise in the language at some places, however most of the time the departure is not a substantive one from the scientific language approved by the scientists. Although the intermediate stages of the Plenary involve horse-trading of words and language, it must be said that the scientists are given virtually unlimited flexibility to exercise their right over the manner in which the science is expressed. Nevertheless, it is equally fair to say that the scientific expressions say in the Chapter have to be distilled to yield clear, simple language in the SPM. This is not easy for the scientists. In some instances, there tends to be tension between the scientists and the Government representatives which, by the end of the Plenary, yields a compromise. But, it is not pretty and the manner in which it is arrived at requires improvements and maybe even some core principles for the process.

2h. Preparation of any special reports

Strength: These are focused and therefore shorter reports. Some of them have been effective.

Weakness: Sometimes too narrowly scoped such that many of the questions intersecting with other scientific areas are left unanswered. Usually, these are then taken up in the main assessments.

3. What is your opinion on the way in which the full range of scientific views is handled?

This is handled generally very well. However, in the case of individual chapters, there can be unsettling aspects. This can go both ways – bending too much in the face of skeptical comments that may lack substance, or paying too little attention to inconvenient comments that call into question scientific weaknesses or technical gaps that are not addressed easily.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The manner of creation of IPCC deliberately brought the science into the realm of the policymakers and governments. Back in the time of the FAR and SAR, there were still many gaps in the science (e.g., detection of warming was just beginning to happen and attribution to human-influenced causes was still in its infancy) such that, while policy-relevant information was being brought closer to decision-makers, it was not that close. Now that science has brought a plate of robust conclusions (even if only at the global and continental-levels) to the door of the policymakers, do they know what to do with it? Or, is physical science now being asked to wade into policy options and choices debates as well? This is a juncture where there are serious concerns about how much science and scientists will be dragged into the bewildering maze of policy decisions and politics by the world's governments. Science and scientists may not be ready for this act.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

There is no substitute for appropriate and in-depth consideration of the peer-reviewed literature.

Literature is growing rapidly with the expansion of climate science and its applications e.g., extending into biogeochemical cycles and ecosystem sciences, and it is already becoming difficult to easily condense the literature that is assessed in IPCC reports. I am afraid that the comprehensiveness and in-depth assessments are going to continue to struggle with the burgeoning literature and there seems little to escape it – witness the increase in LAs with each assessment – but one way would be to engage a large number of specialist contributing authors who can be assigned specific sub-sections. In a sense, this has begun e.g., number of CAs in AR4 versus TAR.

Non-peer-reviewed literature and its use is a problem. This body of literature has to be weighed in carefully. WGI rules in AR4 were that this literature had to be weighed with meticulous care. If a ‘grey’ literature happened to yield a unique viewpoint, it probably would not make it to the Chapter unless found to be compelling by the LAs and CLAs concerned. Even if this was adding some weight to prior literature, its citation was done only after a full examination of that paper by all concerned. These safeguards will need to be further improved in AR5. It will probably be impossible to keep them away completely as happens in some journal worlds. In the case of WGII subjects, this may actually be impractical. However, if such literature is needed, there can be erected some core principles which must be adhered to by each chapter and the SPM, with the primary responsibility for inclusion and citation falling on the CLAs. In this way, embarrassments can be avoided.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The treatment of uncertainties has improved and the technical aspects have advanced considerably since the SAR. Nonetheless, end-to-end propagation of uncertainties, performed at least in qualitative or confidence measure terms, has not been done. Yes, this is a formidable task but needs to be started in a purposeful manner and allowed to evolve. This would be a bold venture but, at some point, there needs to be transparent traceability from science to impacts e.g., emissions to physical system changes to impacts, with characterization and quantification of the key uncertainties.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

This is handled very well insofar as identification and rectification of errors and making these known. There have been errata published in conjunction with the last 2 Reports. IPCC material is voluminous, covers a large scope and it is impossible to be free of errors. However, what is important is the recognition of the errors and the timely publication of errata. Errors arising because of sloppiness are inexcusable but the lesson from such discoveries is to strengthen the process the next time around. Data going into the IPCC reports is quite well vetted. But, it must be noted that IPCC does not do the research itself and relies on the published literature. Thus, it becomes incumbent upon the author teams to dig in and inquire from various angles so as to catch shortcomings in the literature. This procedure does happen in the IPCC. Still, some errors can creep in anyway, and the only way to improve upon these is the subsequent assessment.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Very poor once the Plenaries are over and all scientists, so to speak, have gone home after discharging their responsibility. In the inter-Assessment period viz., between end of one and start of next IPCC, there is no IPCC really since the Secretariat is poorly occupied. But, the message here cannot be to overstock the Secretariat. The Secretariat needs to have few permanent media-savvy people who can interface well with scientists but know how to preserve the scientific accuracy yet use modern communications methods to deal with the press and public.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Regarding the science, the IPCC model has had towering success, especially the fact that the science has not been eroded in the successive Assessments, in fact it has been strengthened. There are other aberrations that must of course be corrected but this does not detract from the principal scientific findings having been made robust over the past 20 years. However, the IPCC assessments have run into more complications in the case of WGII and III. Although premature at this point in time, perhaps the IPCC process, as we know of it stops being effective once it goes beyond the physical science. For impacts, vulnerability, adaptation and policy planning purposes, more focused bodies with modified review structures in place may better address the issues and deliver the needed decision-relevant information.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

IPCC officers must be neutral with regards to science, impacts and policy until the Assessment is over. After that, they should be hewing to the Reports. While any individual is free to speak out their views, yet there must be the realization that notions about the IPCC office being non-neutral can lead to a dangerous perception that damages IPCC as a whole.

11. Any other comments

One of the serious challenges with the IPCC is that participation in it as a LA/CLA does not count in the accepted citation indices. Given that the Assessments take 4 years, this is a serious loss for any scientist wanting to advance their careers since the IPCC work usually prevents other research and publications from getting done. Since this is the world's premier "review" process in climate science, there should be strong moves undertaken to make IPCC authorships count in the leading citation indices as review works. The lack of this citation opportunity has inhibited many young and untenured scientists to not be motivated to participate. Along with the above is also the inhibition of proposal writing for grants that is felt by the academia.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Reviewer, lead author, CLA, member of the core writing team for a Synthesis Report, participant at IPCC Plenary meetings to approve the SPMs

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

Before I respond to your individual questions, please allow me some over-arching thoughts. They will be a theme in subsequent remarks.

The major weakness that I see involves the blurring of the line between policy relevant assessment and policy prescriptive pronouncements by some of the IPCC principals. Author teams at all levels are careful not to overstep this boundary; and when they do, the review process pushes back. IPCC leadership, however, is less careful when the reports are released. It is one thing for the Secretary General of the United Nations to conclude from an assessment what has to be done. It is quite another for an IPCC official to mention that he or she is taking off his or her “IPCC Chapeau” and speaking as an individual to announce that this or that should be done.

More to the point, it seems to me that IPCC leadership, including the Chair, the co-Chairs, and members of the Bureau, cannot help themselves. They frequently make policy prescriptive statements that are widely quoted.

While they may be correct in content and intent, these statements give a false impression to the world about what the IPCC can and cannot do; and the rest of us are left to try to explain.

Another weakness can be traced to the fact that author teams, including CLA’s, Working Group co-chairs and sometimes TSU staffers, dissolve when the reports are accepted. There is, therefore, no place to turn officially when errors are found and/or conclusions are questioned in the popular press and by climate skeptics. There is, as well, little that can be done to correct mistaken claims of errors or misleading representations of IPCC processes and procedures.

This second weakness came to mind when I participated in the recent release of reports by the US National Research Council. In contrast to the IPCC, the US National Academy of Sciences maintains a strong support infrastructure that can be mobilized at a moment’s notice even after reports are released. Indeed, members of Academy committees and panels generally feel that they have accepted lifelong responsibilities in the sense that they can be called upon to respond to whatever comes down the pike; and their contributions are pro-bono just like IPCC.

To be sure, NRC committees and panels are smaller than IPCC author teams, but it seems to me that some sort of mechanism should be created so that issues can be handled quickly and perhaps even proactively between assessment reports. The core writing team of the Synthesis Report might be the likely place to look to staff this mechanism support – 6 authors from each Working Group plus co-Chairs (in the case of the AR4, anyway) – who know how the various parts of the assessment hangs together and who also have direct contacts with other CLA’s and LA’s from their respective author teams.

To be clear, this mechanism should not be charged with updating the science as new literature is published – that is the task for the next assessment author team. It is, instead, to sustain the credibility of the last assessment as a snapshot of what we knew and did not know at a particular point in time.

Finally, there is a fundamental misunderstanding of the term “consensus” when just about everybody talks about IPCC documents. IPCC assessments do not report consensus science (except in very rare occasions like “warming is unequivocal”). Proof of this assertion lies descriptions of why so much trouble is taken to include confidence and/or likelihood statements in the Executive Summaries of each chapter, the Technical Summaries of each Working Group Report, and especially the Summaries for Policymakers drawn from each Working Group Report and the Synthesis Report.

In fact, IPCC ultimately produces consensus documents that include those confidence and likelihood statements when governments unanimously accept each word of an SPM – sometimes one at a time. “Consensus” is, therefore, an adjective that should be applied only in a precise political and international-negotiating sense to indicate how conclusions from the various assessments will inform climate negotiations at upcoming COP’s

Turning now to your specific questions.....

2a. Scoping and identification of policy questions

The scoping process is cumbersome, but it works reasonably well as long as the participants at scoping meetings and the member countries at plenary meetings are aware of what previous assessments have concluded and have some idea of the degree to which more recent published work supports or contradicts those findings (i.e., where the science has been moving since the last assessment).

To be sure, scoping outlines for forthcoming assessments (that have to be approved unanimously by governments and cannot be altered once that approval has been achieved) can sometimes inhibit the inclusion of new insights into forthcoming assessments. One might, for example, see some significant problems in placing the consequences of new literature that could alter the way the problem should be framed (like Solomon, et al. PNAS, 2009) into the next assessment. More specifically, if very long-term temperature is determined by the peak in atmospheric concentrations of carbon, then the implications of overshoot scenarios could be significantly altered (i.e., why shoot for 450 ppm if feasible pathways to that limit involve peaking at 550 ppm before heading back down?).

Nonetheless, author teams have always been very creative in getting new information into their chapters and, if it is as fundamental as this example, into the SPM’s. These comments are, therefore, more of a warning than a complaint.

Since assessment reports rely so heavily on existing literature (indeed, are prohibited from doing “new science”), it also strikes me that publishing the scoping outlines as soon as they are

approved might be a good idea. The outlines do not indicate what would be concluded; they suggest, instead, where governments have particular interest. With sufficient lead-time provided by timely release of the outlines, research teams could adjust (some of) their research plans so that some of the existing literature could be right on point.

2b. Election of Bureau, including Working Group chairs

From the perspective of an author who has always had good relationships with TSU and Co-chairs, this all seems to be a bit of a black box. For others, I expect that it looks completely opaque.

2c. Selection of lead authors

The nomination and selection process is cumbersome, but necessarily so. It works reasonably well in large measure because author teams can invite Contributing Authors as they conduct their work. When significant gaps are discovered in an author team because of new science or selection oversight, however, it should be much easier to add lead authors to the process; the current author team should have almost complete *carte blanche* at this stage.

It is also difficult to attract younger authors who have not had IPCC experience in the past, but that is more of a problem with the discipline-specific tenure structures of the academy that even the National Academies face.

2d. Writing of working group reports

The writing process works well, in my experience, anyway. This is not to say that every meeting was cordial and comfortable. Rather, it is to say that every meeting was professional and constructive. I have never left an IPCC meeting thinking that I gave more than I received.

Bringing review editors to author meetings early in the process was a big help last time, especially for a Chapter and even more so for the Synthesis Report. Review Editors traditionally focus authors' attentions on specific comments that needed greater attention than others. I hope that their role is not diverted too much toward looking for inconsistencies across chapters and working groups so that this function is not diminished. It may be that a different set of review editors who are expert in specific topics (like ice sheets and glaciers) should span the three working groups on those topics to make sure that problems do not occur.

None of this is to say that personality and free-riding issues do not arise within author teams at the chapter level. That is the price of doing collaborative work; and it neither is an issue at the Synthesis Report level.

2e. Review processes

The review process works reasonably well, although the volume of comments can be overwhelming for author teams.

Some increased attention should perhaps be paid to soliciting comments from skeptics and others who have been critical of one bit of literature or another. When people like Stephen McIntyre submit comments on early drafts (as he did for Working Group 1 last time), the reports improve and are less vulnerable to attack by conspiracy theorists.

I do not know what to do about critics who refuse to participate even when they are invited to contribute comments, to serve as a review editor, or to contribute as a lead author. At the very least, I would think that their criticism of the IPCC process would lose credibility if it were understood more widely that they had never participated in the IPCC despite having been invited.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Working on the Synthesis Report is perhaps the most challenging and therefore the most rewarding exercise. It takes a long time and a lot of extra work to turn the Synthesis Report into a coherent document.

Put another way, early drafts frequently look as if abbreviated summaries from the three working groups had been stapled together. The key is getting the author team of the Synthesis Report to work together to tell an integrated story of “what we know”, “what we do not know”, and what that all means for the relative efficacy of alternative policy design and implementation (as opposed to “what we should do”).

Starting earlier in the process might help, but there is a timing problem. Working group reports are always “works in progress” that can change markedly as they evolve. Reliable drafts are not usually available until the Third Order Drafts are sent out for review. Moreover, imposing too much structure on preliminary scoping exercises for the Synthesis Report is dangerous if it locks in a story that may not be the one that people want to tell.

The only real solution is strong but responsive leadership by the co-Chairs. Susan Solomon was outstanding in that regard last time, but it was not until the last core writing team meeting that synthesis really started to happen.

2g. Adoption of report by the IPCC plenary

IPCC Plenary meetings where Reports are approved are organized chaos. The hour by hour tensions are extraordinary and the process is dominated by countries that can send big delegations (so that members can spell each other). It is always sad to see paragraphs being debated while delegates from the countries whose interests are central try (vainly sometimes) to stay awake in the middle of the night. Authors sometimes want to drop heavy books just to wake up the house.

That said, the intergovernmental part of the IPCC is essential. Countries need to buy into the conclusions word for word if they are to be the basis of subsequent negotiations. This is where “consensus” is important and appropriate. Authors fully understand that the science could be questioned over and over during policy negotiations if nations did not take the time and spend

the effort to agree on the underlying science at a meeting devoted exclusively to that science.

2h. Preparation of any special reports

Equally painstaking and not a suitable replacement for overall assessments.

3. What is your opinion on the way in which the full range of scientific views is handled?

It has always been my experience that disagreement over the science is handled appropriate by author teams when they debate confidence and likelihood statements. The review process frequently adds nuance to the discussions and suggests when Contributing Authors might be needed.

Indeed, my most cited paper was the product of an enormous debate about what the underlying literature said about confidence in the conclusion that we had observed the climate fingerprint in a growing literature of observed impacts.

Debates about what the science says are always a part of every authors' meeting. Feelings are sometimes hurt. Friendships are sometimes strained. But the plurality of the process makes it impossible for any one author or any small group of authors conspiring at a table during lunch to have their way at the exclusion of others'.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

As mentioned above, there is a tension between governments and authors. It sometimes erupts into heated disagreement, but governments are the clients and their participation is essential. Like the unwritten rule in baseball that ties go to the runner, it must always be reiterated that the author teams are the science experts and that they must have the last word. I have seen countries like the United States offer compromise language that runs counter to their stated positions on climate change because doing so would protect the integrity of the IPCC intergovernmental process. As long as that view holds, the government role is appropriate.

That said, governments should not (and generally have not) create plenary approved outlines that are so rigid that certain scientific results cannot be included in an assessment. Governments certainly know that controlling the agenda is power, but they have not (yet??) deliberately used that understanding to hamstring an assessment.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

As increased attention is paid to adaptation, careful inclusion of increasing amounts of grey literature will be essential (because it will be practitioners who work the adaptation problem and conduct their own reviews of what works, what does not, and how iterative decisions must be made).

The process of posting and archiving all grey literature cited in an assessment must be strengthened and made more transparent and accessible. This will require IPCC's paying attention to maintaining and improving their archiving function – and so it will require resources. There are places around the world that know how to do this, and their expertise should be employed.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The IPCC reviews procedures for characterizing and communicating uncertainty before every assessment, and it has not yet discovered the perfect approach. We are still working that problem.

Still, the AR4 Synthesis Report SPM provides evidence that the literature's message of how to cope with uncertainty has been conveyed. On page 22, countries agreed that "Responding to climate change involves an iterative risk management process that includes both adaptation and mitigation, and takes into account climate change damages, co-benefits, sustainability, equity and attitudes to risk." To me, this means that the IPCC can no longer rely on its methods to identify and communicate high confidence or highly likely conclusions. Countries want to be informed about high risk possibilities, and so low confidence but high consequence conclusions must now be highlighted. That is the task for AR5, but its author teams need to be very careful to avoid critical comments of their having released unrealistic hyperbole.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Please see comments above. In addition, it is important to note that errors come in different flavors. The wrong year for the projected disappearance of the Himalayan glaciers and the wrong percentage of 'land below sea level' in the Netherlands are examples of errors of commission that need to be acknowledged frankly and rectified promptly.

In a few other cases, like the discussion of the correlations between crop yields, climate change, and climate variability in North Africa, caveats that were carefully crafted within the chapters were not included when language was shortened for the Synthesis Report. While striving to simplify technical details and summarize major points, some important qualifications were left behind. These errors of omission in the summary process should also be recognized and corrected.

Other claims, like the one reported at the end of February in the Wall Street Journal suggesting that the AR4 did not mention the millions of more people who will see increases in water availability that were reported in the cited literature along with the millions of more people who will be at risk of water shortage, are simply not true; and mechanisms to respond rather than rely on editorial boards to be willing to admit mistakes need to be created.

In every case, it is essential to emphasize that none of these interventions alter the key finding from the AR4 that human beings are very likely changing the climate, with far-reaching impacts in the long run.

The heated debates that have emerged around these instances have even led some to question the quality and integrity of the IPCC. Recent events have made it clear that the quality control procedures of the IPCC are not watertight, but claims of widespread and deliberate manipulation of scientific data and fundamental conclusions in the AR4 are not supported by the facts. Support infrastructure that allows representatives from assessment writing teams to function together even after the full author teams dissolve must be created so that this message can be reiterated again and again from a credible source that has not made policy prescriptive personal pronouncements.

The IPCC has transparent procedures for using published but not peer-reviewed sources in their reports. Failsafe compliance with these procedures requires extra attention in the writing of the next round of assessments. I have already mention the idea of implementing topic-based cross-chapter reviews by experts in an impact area of climate change, such as changes in water resources, who can scrutinize the assessment of related vulnerability, risk analyses, and adaptation strategies that work downstream from such changes. To continue the example, assessments of possible increases in flooding damage in river basins and the potential for wetlands to provide buffers in the sectoral and regional chapters could be evaluated by hydrology experts. This orthogonal structure would be most productively implemented just before the first-order draft, so that chapter authors can be alerted to potential problems before the major review step.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

As indicated above, IPCC gives mixed messages when its leadership makes policy prescriptive statements. This really should stop.

Indeed, including a PR function to the Secretariat might be an outstanding idea.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

As long as the clients (the governments) are happy, the IPCC assessment model is sustainable. Moreover, its assessments serve an enormous public good function for the research community – a “co-benefit” that cannot be ignored.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Responding to climate change must be iterative, and so any institution designed to support those responses must be flexible. It will take a long time to uncover exactly how iterative mitigation and adaptation might be implemented most effectively. The diversity of context across time and space makes it clear that one suite of policies will not fit all. The right answer will vary from place to place and time to time, and the literature will explore why and hopefully uncover some fundamental insights into what makes one idea good at one place at one time and bad at a

different place or even the same place at a different time. IPCC needs to be just as adaptive.

My thought here is that whatever changes are made should not be written in stone.

11. Any other comments

Thank you so much for doing this. Creating this review panel with members drawn from National Academies of Science is exactly what we had in mind when we composed our open letter (see the attached letter).

But more than that, I have attached an editorial that I wrote. I think that you will see my intent; and it applies to IPCC. We need discipline. It cannot be imposed from above, but IPCC must create an environment within which authors and Bureau members and Chairs recognize their obligation to the rest of us. Good luck on that.

FYI... Here is the relevant paragraph from the attached editorial...

We rely on each other. We are all consumers of others' work; and we all hope that our work will be subsequently used by others. We count on each other and so the integrity of each piece of scholarship is essential. We have long understood our individual responsibilities in this regard, but "climate-gate" has taught us that we are all tied together. The integrity of each and every one of us is tied to the integrity of everyone else. If one bit of work is questioned, then all of our work comes under scrutiny. It follows that we must strive to protect the integrity of our communal work in everything we do—i.e., every single possession in every single game.

Maintaining integrity does not mean that we must always be right. Imposing such a high bar would create immediate paralysis; nobody would publish anything for fear of having made a mistake.

Our understanding of complex issues like climate change is forever evolving, and so integrity begins with the truth that anything we write is a snapshot of what we know at that point in time. In the end, integrity in this context simply means that we all must always be honest skeptics with a small "s". We must constantly question. We must admit when we are wrong. We must publish results even when we wish that they had gone the other way. We must understand uncertainty and the limits of statistical inference, and we must insist that our readers do, as well (or instruct them to the best of our abilities). We must, in other words, never overreach.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

LA, RE. Also Lead Author of a special report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

I strongly feel that the present all at once system of drafting the WG1, 2, and 3 assessment reports is not right. WG1 report should be made far more earlier, like two years, than the WG2 and 3 reports to secure the transfer of WG1 knowledge to other working group drafting and also to have more WG1 professionals to be involved in the drafting and review process of other WGs.

2e. Review processes

It is very strange that the important review comments on the Himalayan glacier assessments were looked over without suitable actions, if the professional glacier scientists are involved in the review-reply process.

This suggests the present review process is not suitable without fail-safe mechanism.

At the same time it is true that too many review comments are generally made by scientists and government and it is not possible for the small number of LA and RE to take enough time for processing the review process.

More systematic review-reply process should be made including an increase of the number of RE and a kind of peer review system is introduced.

Also the review process time is too short as compared with that many comments like 30,000 comments.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

WG1 reports is of high scientific level reflecting the progress in the research. But WG2 and WG3 reports need more efforts to make it scientific. I feel it is OK for the Working groups to present more conservative reports rather than writing uncertain and/or not-well reviewed knowledges in the report.

4. Given the intergovernmental nature of IPCC, what are your views on the role of

governments in the entire process?

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I think the present volunteer base IPCC assessment system is coming to the limit point under the situation of a huge volume of data sets are produced by the research community and many criticisms, no matter true or not, are being generated because the global warming problem started to bring a large change to our society and many stresses started among the stake holders. We should ask or establish an organization to collect relevant data sets. I even dare to say that the assessment report should be based only on this 'official data sets', even it is a bit old and conservative, to eliminate complaints and to reduce stress to the shoulder of each scientist.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Coordinated all national activities in relation to engagement with the IPCC

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

The fact that the IPCC provides a working interface between scientists and policy makers particularly those working on climate change is a key strength. Getting the balance right on this issue is critical and the IPCC may be advised to continue to work closely with the UNFCCC through its SBSTA research dialogue to aid identification of policy questions.

2b. Election of Bureau, including Working Group chairs

The bureau is an essential component of the IPCC and it is key to ensure that it is composed of people with the right level of expertise and knowledge of policy, with a mix of leading scientists and experts who are policy familiar.

2c. Selection of lead authors

This is working in an effective manner and should be based on scientific criteria taking account of the global range of experts that have been nominated. Communication, organizational and leadership skills are also required for writing of working group reports

2e. Review processes

The review process is a good balance of expert and government reviews. It is essential that the process for accounting for comments is clear and transparent and that crosscutting issues are similarly raised across the working groups.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

The synthesis report is the key document for communication of material to policy makers. It needs to contain clear concise science, implications of the science and policy options to address these implications. Engagement of the broad spectrum of the policy community is advised in formulation of the scope of the synthesis report, i.e., include other departments as well as environment e.g. finance department officials.

2g. Adoption of report by the IPCC plenary

The adoption process is a task of the plenary and the current process is robust.

2h. Preparation of any special reports

The current process is adequate but a process for combined identification of topics between policy and science experts may be required.

3. What is your opinion on the way in which the full range of scientific views is handled?

The IPCC has to be based on peer reviewed material, which if necessary can be supported by ancillary data from other authoritative sources e.g. UN reports. It should identify areas of agreement and disagreement ensuring that the latter is not linked to academic rivalry. The levels of agreement should be highlighted using confidence levels. The IPCC should ensure that it is not influenced by material in popular or advocacy literature or in the media but should use this to assess communications of facts. In the case of economic analysis we consider that a particular difficulty exists as much material is presented as working papers. The IAC should consider how to best address this issue and make recommendations for improvement of the peer review process for such material.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The key strength of the IPCC is the link and role of governments and the opportunity for them to access information across the spectrum of climate sciences, rather than a select few which are highly influential. The governments need to retain distance from the drafting process, which is currently the case, and have an involvement in the review process for the summaries for policy makers. This should be only to ensure that the material is accessible to policymakers while retaining a line of sight to the full report and to the scientific source material.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

This is clearly a challenge, however as many scientific resources are now available electronically then this makes access to publication databases and citation indices more manageable. Use of non peer-reviewed literature and synthesis reports provided by advocacy groups should be avoided. Data from UN reports or reports from similar international organizations could be included.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

A good deal of work has been done on this for the AR4. This is important and needs to be used as clearly and transparently as possible across the working groups.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The data quality in the IPCC reports can only be as good as that of the underlying literature or reports. It should not be less than this or claim to be greater. If an error is found after publication an errata slip must be provided. If this has implications for material in the summary for policy makers (SPM), then a special team of IPCC writers should be convened to assess what changes are recommended to the SPM. These changes can then be adopted by the bureau or if significant at the next plenary. The review team should include members of the original writing team and new experts, perhaps from the original nomination list or review team.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

One specialized communications team should be in place to generate messages and convey information to the public across of the reporting groups. These should be media trained and work closely with the writing teams for the final phase of the publication process

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions

for an alternative process?

The IPCC assessment model is challenged by the sheer demands of the writing process. Some commentary from the academics involved may be of more value at this point. However, it is clear that as a work of enormous importance it should be resourced as well as possible without compromising the work. No alternative process such as use of academic bodies to wiki's would have the same authority as well as support and trust of governments. The latter point is its essential strength.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Not at this point.

11. Any other comments

The IPCC plays a pivotal and essential role in informing governments such as ours about scientific developments. It is vital that the IPCC reports are compiled to the highest standard. We welcome this review and think that the IAC can provide guidance on a number of issues, for example on the best way to use the peer review process and on how to deal with grey literature, should it be flagged as less robust e.g. economic analyses. Also it would be useful if the IAC can:

- provide comments on how climate science can address the media focus, and communicate the findings better and
- address whether climate scientists need to be subject to a higher standard of assessment than those in other scientific disciplines. If so how might this be achieved?

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Government Focal Point, Head of Delegation of IPCC Plenaries, participant in a Scoping meeting

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Works ok, in principle. Stimulate policy makers to participate better in this.

2b. Election of Bureau, including Working Group chairs

Is made difficult by political motivations. Stricter expertise requirements.

2c. Selection of lead authors

Is an ok process, at least in wg I.

2d. Writing of working group reports

For consistency: More interaction between WG's and with the Synthesis process required

2e. Review processes

Crucial process. Consider to have PAID Review Editors.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Synthesis should start earlier than before and go together with formulating the separate parts.

2g. Adoption of report by the IPCC plenary

Sound procedure.

2h. Preparation of any special reports

Consider to have PAID Review Editors.

3. What is your opinion on the way in which the full range of scientific views is handled?

I can only comment on the Working Group I contribution to AR4. The full range of policy relevant scientific views is, in my view, addressed adequately in that part of AR4.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The IPCC process is in essence a handover of science information from the scientists to the policy makers in governments. For the governments to be able to accept that information they must be involved in the process. It is essential that they have a say in the topics that will be assessed. It is also essential for the governments know that their best and most prominent scientists are involved in the assessments via (co-)authoring and review procedures. The 'line by line' acceptance procedure for the Policy Makers Summary is an excellent device to produce 'ownership' by the governments of the Summary text.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Non-peer-reviewed literature may contain very relevant information that is not available elsewhere. Procedures to verify, mark and qualify such information may be improved.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

In the original literature that is assessed, there is no uniform characterization and handling of uncertainties. Therefore, the only thing that the assessment process *can* do is ad hoc and full of expert judgement. This must be discussed explicitly and marked better where it happens.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Up to publication it is mainly the Review processes that need (even) more attention: consider to use professional/paid review editors. There has been no good mechanism to flag and communicate errors found after publication. IPCC should consider to host 'errata' on their website.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Nothing plain wrong there, but due to lack of funding this has been rather low key and semi-professional.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

In the IPCC process, the scientists that have produced climate science are asked to summarize and assess their work for the policymakers. It is a direct handover of knowledge from the responsible scientists to the policy makers.

There is, in my mind, no real alternative. The job would be far too huge, complex and expensive if done by independent outsiders.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The funding structure should be made stronger (obligatory contribution) to enable professionalization of the IPCC Governance structures and the Review procedures.

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Government focal point, participant in a scoping meeting

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2c. Selection of lead authors

This process takes place only once every 6 or 7 years, so that the accumulation and transmission of knowledge from an organizer to the next organizer is not a very easy matter. I would recommend to extend slightly the general schedule so that each focal point has more time to plan and realize this rather complicated task.

2e. Review processes

For the AR5, a special effort should be made in the reviewing process so that more specialists of climate physics - what is relevant of Volume 1 - get involved in the review of the Volume 2, regarding the assessment of impacts and vulnerabilities.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

A/ The theory seems to me to be as follows

IPCC was created by the governments for the governments.

As first-rank users of the IPCC-production, they have to:

– express what they expect from the reports

– interact with the scientists in a way that respects the independence of the scientific work, but still allows that the reports produce the information that is needed for political decisions.

This interaction is performed in different ways and occasions, including the Plenary meetings, the Bureau meetings, and the reviews.

As authorities having created the IPCC, the governments are responsible regarding the resources that the IPCC needs in order to fulfill its task.

B/ Does-it work?

In my opinion, yes.

My opinion is that science is bringing a very large amount of information to the governments.

What can be observed by anyone is that governments do not complain about the lack of policy-relevant information: apparently, they have the kind of information that they had asked for; but the difficulties seem to be downstream - in making political choices and decisions.

With respect to financial resources: the system of voluntary contribution implies some risk; it should be completed, or partially replaced, by more predictable resources.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

A very large and complex document like an IPCC AR cannot be perfect; that some errors exist seems to me unavoidable. Errors can be of diverse nature: it can be a material error like e.g. a typographical error; or it can be a logical error – a wrong conclusion; etc... Errors have occurred,

and errors will again occur. Punctual errors in such a body of knowledge as an IPCC AR have little impact on the general value of the report nor its main conclusions. But because nowadays the IPCC ARs are subject to extreme scrutiny, a procedure has certainly to be defined for a better handling of errors that are discovered after publication, and their publication. A convenient, re-thought, well-documented handling of errors is today a must, for IPCC.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

IPCC is a unique institution. Something like this has never existed before, and does not yet exist in other domains. Thus, no recipe exists that can be applied to it, regarding communication. One must invent the ways of doing things for IPCC. Up to now, IPCC has communicated at the minimum level. The reason – according to me – is that IPCC is a group of scientists that has understood its duty and has executed it. The duty was: to produce written scientific assessments. The scientists did their job, and have delivered it; 99% of these scientists are anonymous, for the general public, and so they will remain; the secretariat of the IPCC used to announce the delivery of the report, and to give some comments on the product; but not much more. From december 2009 to march 2010, maybe IPCC did not communicate in a victorious or brilliant manner but it was sincere, it was true, it was simple. On the long run, in 5-years or 10-years from now, the communication of IPCC during this crisis may seem to have been the right way, the perfect way – the way of authenticity and truth.

What do I recommend for the near and long term, regarding the communication of IPCC? My answer is: IPCC should simply say what is, should simply tell about things as they are. How IPCC works. What is science. What are climate sciences. Who does the job. What is an assessment. How the review are performed, How the governments interact. What is a report. There is no need to say more.

What are the highest priority targets in the communication about IPCC? In my opinion, they are: the governments, and other political staff, and the journalists. What has to be explained, again and again, is: what is science, and what is climate science. Many people, even among educated people, still have to discover and understand what is science. What is the attempt to describe physical realities. Why it can be a common ground for understanding and cooperating and co-living between people and nations having each their own history, culture, political and ideological orientations. Why it may be, perhaps, the single unique ground for global agreements regarding the conditions of life of human beings, and the conditions of survival of the human species.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Can I imagine an alternative process? Yes, probably.

Is there a need to imagine an alternative process? I would think to change an organization when this organization has proven to essentially fail – which is absolutely not the case with IPCC; there is no need to change what works very well.

Inversely, to change for an other model would break many things, and temporarily decrease the value of assessments.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The secretariat of the IPCC is an uncredibly-small team. The number of staff is less than 15 people, all categories included. The budget of the secretariat – including e.g. the travels of experts from developing countries – is about 4 M Euros, which is very low with regard to what 192 governments expect from this body. This budget relies on voluntary contributions – and most of them are annually reconducted by each contributing Member. A very large part of the other costs are directly supported by the governments and numerous stakeholders – e.g. the organizations employing the authors - on a voluntary basis. Does this has to change, fundamentally? In my opinion, no.

IPCC is a unique, exceptional, and exemplary realization of the global community. What should we add? Only what is required to face the recent critics or similar campaign of critics – because they may come back, be repeated and developed in the years to come. I would be in favor of marginal improvements and growth of the ressources of the IPCC:

–a new rule for contribution from the Members might be studied, so that more budgetary visibility and precision is obtained

–some growth of the secretariat staff – perhaps between +20% and +40% - during the cycle of the production of the AR5, so as to better treat: communication, quality control, quality assurance, documentation, public relations, information.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead Author, reviewer, IPCC Bureau member

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

I have not identified any major issues. One could argue that for many countries the scoping and identification is from those already inside the IPCC process, but there is such a diversity of views present now among members I doubt this is a serious issue.

2b. Election of Bureau, including Working Group chairs

The size of the Bureau does seem about right and it appears to have the right amount of diversity. The election of the Bureau for the 5th assessment was a shambles because of weaknesses in the

rules but these are now being addressed. The developed country WG Chairs are pretty much locked up between Europe and the US; though they invest heavily in the process, for the benefit of the IPCC as a whole, they can lock out bids from smaller countries, e.g. Canada and NZ for WG 1 this year. The US is almost always elected unopposed. That said, looking objectively at how those co-Chairs have worked, one could not ask for a higher scientific standard or higher ethical standards,

The DC/EIT elections are more political but in my experience they are all high-quality individuals.

The system of voting could be made sophisticated but this may be at the expense of expertise being the primary consideration: at present I am comfortable all co-Chairs well and truly qualify as experts in the field.

2c. Selection of lead authors

Having just experienced the process from the inside for the first time, I can say it is a remarkable process. The effort put in by Bureau members has truly impressed me. The weakness lay not in the selection process but in the nominations, particularly for developing countries. In many instances it was clear the country nominations did not span the expertise within a country and in a number of cases the national focal points did not seem to be in a position to put the best slate forward. While there may be some political overlay, it does seem that in many cases it is simply the weakness of national coordination and liaison.

Despite the thinness of expertise in DC/EIT (particularly in WG 1), I have been impressed by the overall quality of expertise. The 40% target does not appear to me to be comprising the quality of the LA teams.

The one issue that is disconcerting is the degree to which LA selections go beyond those nominated by countries. While it is to be expected that some experts may not reach nomination lists, in some cases in AR5 large numbers of LAs were being drawn from beyond the submitted nominations, far far more than can be expected from experts accidentally missing nomination lists. The Bureau does have a licence to nominate experts, as it should but some guidelines should be developed. It is also worrying that that list of contributing authors does tend to be strongly influenced by the LAs, and dominated by developed country experts.

2d. Writing of working group reports

No particular comment. I remain in awe of the scientific quality and thoroughness.

2e. Review processes

Generally it seems to work well. However, it is now getting hard to change the process at all. There were some excellent options put forward for AR5, trying to strengthen the regional aspects, but in the end the schedule and structure pretty much stayed the same as AR4. Most of the resistance came from DC/EITs, fearing a down-grading of the regional aspects.

The tight timelines, particularly the the short period between the WG 1 and 2 cycles, diminishes the ability to build assessments from WG 1 into WG 2, or to exploit WG 3 in the scenarios of WG 1. However there is no perfect way and perhaps this is the best one can hope for. Clearly if one simply works from the quality and value of the WG reports, the process must be working pretty well.

I think those who designed the process should be very proud of the way it has worked, particularly the peer review mechanisms. It is quite remarkable how few errors are identified. If there are lessons they are around the transparency of the process and the willingness to accommodate scrutiny..

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

I have no first hand experience. From the outside I regret that the consensus approach does tend to reduce the potential impact of the report. I worry almost not at all about the SYR and SPMs over-playing the assessment of change, but have many concerns about under-estimating the amplitude and rate of change.

2g. Adoption of report by the IPCC plenary

No comment

2h. Preparation of any special reports

These seem to be emerging as one of real strengths of the process, since there is more opportunity to "tell it as it is" and (seemingly) less political overlay in the acceptance process.

The ability to turn around reports in a rapid time might provide a pointer to how future assessments could be constructed, with SRs providing a substantial basis and more timely release of critical information.

3. What is your opinion on the way in which the full range of scientific views is handled?

All I have witnessed is CLAs/LAs bending over backwards trying to ensure the full range of views is admitted. The most difficult ones have probably been when there is a diversity among leading experts rather than ill-informed view from non-experts.

The process seems to have the right balance, with dissenting views clearly represented in the reports.

The peer-review process and basis in the published literature do I think ensure balance.

If there is a watch-spot, it is the tendency for CLAs/LAs to go to "friends" as contributing authors and to take advice from within an inner club. It is often done for pragmatic reasons - to

get timely submission of material, of known quality - but it can reduce the "biodiversity" of the scientific views..

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I think they have pretty much got the balance right, but clearly as the process matures the tendency will be for the reports to follow the path of least resistance rather than the "right" path. The fact that ebates are under-pinned by science makes them quite different from other intergovernmental experiences in my view; At my first IPCC Panel meeting I was impressed by the quality of the debate, particularly from DCs/EITs. This cannot be said of intergovernmental fora in the UN

The role of Government reps in the Bureau probably does need examination. Not only do nations draw considerable benefit from having an elected member of the Bureau, but they also get a second advantage by being able to send Govt reps to the Bureau meetings. Compared with those majority of IPCC members who are not part of the Bureau, including many DCs, this is I think a "bias" that may not be productive. Either the Bureau should just be for the elected Bureau, or all Members should be given opportunity to comment/engage in the business of the Bureau. [That said, I can not point to any decision of the Bureau that has been flawed through the current process; it is simply the potential.]

It is clear that not all Governments (or indeed Bureau members) come along with the scientific integrity of the IPCC foremost in their minds. Many arguments are pitched around antional interests or parochial regional interests; Block influence is quite common.

I am a strong supporter of the IPCC being an intergovernmental process versus international. It is a strength.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

As the AR5 WGs have identified, there are technical opportunities to improve access to literature and improve efficiency [I can only imagine how IPCC would have handled 3000+ nominations with CVs in the old days!]

Strengthening access to underlying data is a challenge but it is one that is important for the strength and transparency of the process.

The growth of grey literature, particularly in WG2, provides some unique challenges. Though there are risks, the IPCC must embrace this challenge, particularly if the expertise of DCs is to be properly represented

There may need to be an institutionalised process to routinely document and make accessible relevant literature.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I see a great awareness of the issue within IPCC. While there are considerable scientific challenges in capturing reliable information on uncertainty, perhaps the biggest challenge is in ensuring that the standards and protocols for communicating uncertainty, from scientist to scientists, from chapter to chapter, from WG to WG, from IPCC to the scientific community, and from the IPCC to the public generally, has strong foundations.

mis-interpretation of uncertainty as "do not know" is a big communication challenge.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I am not sure data quality control and assurance is an IPCC issue in the first instance. We have a peer-review scientific process for that. One weakness is that we generally do not have peer review processes for major data holdings - just because there is a quality publication from a dataset does not mean all the underlying data are good. In the physical sciences we have struggled at times to get a robust discipline around data and datasets, as we have scientific publications.

The identification and rectification of errors is a separate issue. In general I have found IPCC to be open and transparent.

If there is an issue I think it is around the authority of CLAs/LAs and the Bureau responsible for a particular assessment once the assessment has been published. For a scientific journal one would write to authors through an editor to query a result. Is it the past bureau or current Bureau that takes the role of the Editor? Do the CLAs/LAs have licence to amend/agree corrections, or should the process be through the Chairs of the current Bureau? Is a chapter "owned" by the authors or by the IPCC? If the latter then it is only the IPCC, or its Bureau that should be engaged in corrections. Today, we have a process whereby CLAs of AR4 are revisiting conclusions 3 years after they were signed off by IPCC.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

It is self evident that it can be improved, but the IPCC should stick to its mandate and not venture into communicating things that are really the responsibility of individual scientists or nations.

It should give priority to the transparency and accessibility of underlying information.

It should develop storylines and strategies around all publications, not binding on nations, but to inform nations of the key messages; this should be signed off by the responsible Chairs/CLAs.

While the general public does need to access IPCC information, I do not feel communication with the general public should be a priority of IPCC. leave that to Governments.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I like and admire the model. as always, it can be improved, but the starting point is a model that already works very well.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Not really. As with all intergovernmental secretariats, it can be irritating at times to see the inefficiency of the UN process and the expense c.f. doing business outside the UN process. The IPCC has the great advantage that a lot of its real work is done via the TSU, and these are generally very efficient and effective, and without bureaucratic encumbrances. I shudder at times when I see how the budget and planning is handled but it seems to work.

Given the impact of its work, the IPCC must be one of the best deals on the planet (some CEOs get paid more than what the whole IPCC costs!).

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead Author, Coordinating Lead Author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Scoping and identification of policy questions in the IPCC process is problematic on two counts. First, given the time-lag between the scoping of the assessment and its delivery, it is hard to envisage at the time of scoping what the needs of the policy community would be several years later. Second, most questions confronting policymakers [e.g. what level or rate of climate change is “dangerous”] ultimately require political judgment. Such questions can only be partially informed, but not answered, by science. These challenges are fundamental and cannot really be addressed in the IPCC process (unless IPCC resorts to fast-track reports and/or policy advocacy). Therefore there are very few instances where IPCC may have directly helped address the specific needs of the policymakers. Where IPCC helps, particularly through its end to end assessments involving thousands of experts, is to periodically reinforce the need for action by focalizing global attention on the seriousness of the problem.

2b. Election of Bureau, including Working Group chairs

This is a closed door exercise, likely involving bargaining among the member governments that, as an author, I am not privy to. While having one developed and one developing country co-chairs might help with political legitimacy, it is the developed country co-chair who typically has de-facto control over the WG. Even more important are the Technical Support Units (TSU) who effectively run the Working Groups.

2c. Selection of lead authors

Again, this is a closed door exercise based upon nominations from governments and international organizations. Given the vast number of nominations and the few slots available, there is ample room for preferences to play a role. While the selection of any panel of experts is ultimately a subjective exercise, I do feel that the selection process of lead authors has some problems.

Developing country expert “tokenism”: While not always true, at times the developing country authors are chosen more to boost diversity and legitimacy than for substantive input. It is not uncommon for chapters to be written (and key decisions made) by a much smaller group of authors in consultation with the TSU. Even developing country CLAs at times are given due recognition or have the ability to be equal partners in leading the chapter drafting process.

Legacy and Revolving Door Appointments: At least in WG2 there is a subset of authors who continue to maintain influential roles in assessment after assessment. This is in part due to their stature in particular fields of research, but quite frankly no field is so thin that a turnover in the writing teams is not possible between successive assessments. This does lead to an insider-outsider problem, where a much smaller group often working in tandem with TSU is actually running the show. TSU staff – who actually carry considerable influence (including a key role in the choice of lead author teams) – should also not be recruited from participants of previous assessments to minimize conflicts of interest.

The IPCC process would be much more open, and rigorous, if there was complete turnover of CLAs and LAs *within* a particular Working Group between successive assessments. Also, the revolving door between authors, Review Editors, and IPCC staff between successive assessments should be limited (particularly within one Working Group) to minimize “club” formation and potential conflicts of interest.

2d. Writing of working group reports

Writing of the working group reports – at least the chapters I have been involved with – has been a very intense and fair process, where as a team we have sought to objectively assess the state of available knowledge and respond to our best ability to the review comments.

That said, given that LA roles are pre-assigned there is no leverage on CLAs of writing teams to induce adequate contributions from the entire team. Some LAs simply did not contribute enough but because they were nominated by their governments, nothing could be done to induce them to contribute.

Some flexibility in chapter roles – based on actual contributions – could align incentives better. Acknowledgment of roles should be by effort, not fiat. In previous assessments the Lead vs. Contributing author categories were flexible for precisely this reason.

2e. Review processes

The Review Process has become quite formalized and there is now high accountability for each and every comment received. However, there are several problems:

- Many comments are submitted via multiple channels and over multiple iterations [e.g. via government reviews, expert reviews etc.]. This often leads to unnecessary amplification of views/concerns of isolated experts who happen to be extremely vocal.
- Accounting for several hundred pages of comments over multiple iterations for a 30 page chapter has become an extremely demanding task for the CLAs, especially given that they are taking on this responsibility in volunteer capacity. Errors of omission or commission are bound to occur in such a process.

One rational way out would be for the IPCC to assign the services of a research assistant per chapter for a few critical months during the review process. This would reduce the currently very unreasonable burden that has been placed on CLAs. This will make the process more expensive, but it won't crowd out experts who simply cannot handle the headache that comes with having to lead an IPCC chapter.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

I wasn't too involved in the Synthesis report so would leave it to others to comment.

2g. Adoption of report by the IPCC plenary

There are obvious concerns with regard to line by line approval of the summary of a scientific document by government representatives. However, on the other hand the key reason for IPCC's influence has been engagement and buy in by the governments. I am much less concerned, compared to others, about this aspect of the IPCC process.

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

It is very hard to generalize across chapters, working groups and assessments. Among the chapters where I have been directly involved, we have made an earnest effort to capture the full range of scientific views. That said, it is important to mention that the composition of the writing team is quite critical as well. If the writing team happens to be dominated by a particular paradigm (or worldview) it may become quite difficult to objectively capture the full spectrum of scientific views.

This is particularly the case with WG2 that encompasses a wide range of disciplines, including many social sciences, where often it is hard to differentiate analysis from value judgments.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I think governments are essential to the stature and downstream influence of the IPCC. Contrast, for example the Millennium Ecosystem Assessment – that also engaged a large number of leading experts but without an intergovernmental process [and had little policy impact], with the IPCC.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I think IPCC has made significant improvements in recent years in communicating with the public. However, I have been quite concerned that many in the IPCC leadership have in their public statements taken positions that go beyond the content of the assessments and veer on advocacy. This is not limited to the IPCC chair. The former chair of IPCC WG2 was using his past affiliation with the IPCC to take fairly strong advocacy positions on financing for climate change ahead of Copenhagen, for example.

I do think it would serve the credibility of the process well if there is a clear code of conduct for the IPCC management, including past co-Chairs etc, in terms of how they use their IPCC office to communicate on matters of climate policy.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Much as I value what the IPCC has accomplished to date, I do question the necessity of continued end to end assessments. How much is it really meeting the needs of the policy community (assuming the policy community really needs more information to act) and how much of it is really sustaining the interests and professional stature of the various research communities that have become intertwined with the IPCC ? I wonder.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Yes. IPCC management – including ex-management, should refrain from public statements or

activities that could be viewed as advocacy, or benefit personally or professionally from their IPCC role. There should be a clear code of conduct.

Likewise IPCC Secretariat and TSU should be under greater scrutiny as this is where critical decisions (including selection of authors, key decisions regarding the report) are made. A “full refresh” [or as close to it as possible] within each Working Group between successive assessments would help. There should also be some checks and balances as regards the revolving door between IPCC staff, review editors and lead authors between successive assessments to limit the possibility of excessive control of the assessment process by a few.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Government delegate, IPCC official

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

This has over the past years evolved as very robust and comprehensive process, with involvement of experts who are aware of gaps identified in the previous assessment, new experts bringing fresh ideas to the table and representatives from governments who are aware of policymakers needs. This step in the process does not need substantial changes. It needs however, careful planning starting more or less after adoption of the last element of the previous assessment report to get input from authors. At this stage it is important to engage in an active a dialogue with the policy process, in particular the UNFCCC in order to respond not only to information needs but to do so in a timely manner.

2b. Election of Bureau, including Working Group chairs

The IPCC has given careful consideration to Rules of Procedure for the Election of the IPCC Bureau and any Task Force Bureau (Appendix C of the Principles Governing IPCC Work). At the recent elections when these Rules were applied for the first time some minor procedural problems were observed and revised rules will be presented to IPCC-32 for adoption.

The Terms of Reference for Members of the Bureau were defined in 1992 at the 8th Session, but due to structural changes in the Bureau they are no longer fully applicable. E.g. at this time regional representatives had been added, which later became WG Vice-chairs and do no longer see themselves as regional representative. The Panel however has not addressed the TOR for the Bureau and its members since then.

A requirement which limits the choice of developed country Co-chair candidates is that their country has to ensure that it is willing to provide a Technical Support Unit.

2c. Selection of lead authors

This is a well developed process involving nominations by government focal points and observer organizations and identification of qualified experts by the Working Group Bureaux. However, in some countries and regions it is still difficult to identify the best experts and IPCC may need to reach out more pro-actively to Universities and research institutions, in particular in developing countries.

2d. Writing of working group reports

The IPCC procedures (Appendix A to the Principles Governing IPCC Work) provide very good guidance on the main steps to ensure a robust assessment. Improvements could be made in terms of consistent application (facilitated through e.g. a checklist of actions to be taken at every step) and documentation of all steps of the assessment, e.g. which literature has been considered in the various drafts, why and when references have been removed or added (by whom – reviewer, LA, CA ?), which steps have been taken in terms of quality control and validation of source (in particular for non peer reviewed literature), which steps have been taken to identify non English language literature, what is the acceptance date for new literature to be included, and which sections of a chapter/report have been moved within a chapter or to other chapters. It is very important to be able to track key statement in the summaries (SPM, SYR) to underlying literature and key steps of the assessment. Version control tools and other means should be explored and applied. The role of Review Editors is crucial and may need to be strengthened.

Improvements need to be made also in cross working group coordination to ensure consistency. While this works rather well in case of agreed cross cutting themes there are numerous other topics which cut across Working Groups, e.g. dimensions of sustainable development, equity and livelihood, glaciology, hydrology, agriculture, infrastructure, implications of transition pathways it is important that related chapters and sections are systematically reviewed at all stages by relevant authors from other working groups. A mapping of issues and topics would be very useful to help achieve consistency. Staggering of reports to allow for more time would help. But staggering is always a controversial topic in the debate about timing of assessment reports, with both, government representatives and experts bringing pro and contra arguments to the table.

2e. Review processes

While it is important that the review remains open to all experts more efforts may be required to enhance comprehensiveness, to ensure that all sections are reviewed by the best experts in the field, and to avoid that some sections do not receive sufficient high quality reviews. More guidance to reviewers would be useful, consistent with comments made above, e.g. to alert glaciologists of all chapters and sections which address glaciers. This would mean that e.g. WG I would have to inform WG II of relevant expert reviewers who would then be invited to review the respective sections of the WG II Report.

While it is mentioned in the procedures and in the letters to government reviewers, more efforts may be required to in the second stage of the review to ensure that reviewers making comments

on the SPM study also carefully the relevant sections of the underlying report, and that comments on SPM and chapters are always cross checked by all authors (and not only the SPM/TS team).

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

There are different views whether the policy relevant questions to be addressed in of Synthesis Report should be identified early in the process to ensure that the topic is addressed in the working group reports and to enhance cross working group integration from the very beginning or whether the SYR structure should be derived from the draft WG reports. Both models have been applied in the past. In any case it would be important that dedicated scientific staff (in the IPCC Secretariat and/or the Chairman's office) follows from an early stage the development of the WG reports with respects to what is relevant for the SYR in terms of integration and topics to be addressed.

2g. Adoption of report by the IPCC plenary

This is a well established process and has over the years become often a very dialogue between the authors of the report and government representatives who will be using them for decision-making. The Sessions indirectly contribute to capacity building, because the delegates who participated in the Session really understand what are the key conclusions of the report. The important thing to keep in mind is that the SPR and SYR accurately reflect the scientific findings of the report, and that in this respect the authors have the last word.

2h. Preparation of any special reports

In terms of process the comments made above apply. Special Reports when chosen carefully in terms of topic and timing can be of great value for decisionmakers, not only in the public but also in the private sector (E.g. reports addressing carbon capture and storage, aviation, HFC and PFC, and renewable energy sources). It is however important that they do not duplicate but rather feed into the overall assessment process. A framework for deciding on Special Reports has been agreed by the Panel before the 4th assessment and it was decided to keep it in force for the current assessment round.

3. What is your opinion on the way in which the full range of scientific views is handled?

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

As intergovernmental process key decisions on the IPCC workprogramme have to be taken at government level, including which report to prepare, the scope and timing and the budget. After all IPCC has been created to provide information for decisionmakers with the UN General Assembly requesting the first assessment report.

In order to identify their information needs governments have to be involved in the scoping of a report and approval/acceptance/adoption the report and its summary for Policymakers. It is also

prudent to give governments the opportunity to review the draft report and its Summary for Policymakers. The current procedures reflect that very well, while ensuring that the scientific assessment by the authors evolves without government or political interference.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

It would be desirable to expand the assessment of scientific technical and socio economic literature in other languages (non-English).

Concerning the use of non peer reviewed literature clear guidance exist in Annex 2 of Appendix A to the Principles Governing IPCC work, which need to be strictly implemented and may need to be strengthened/clarified. TSUs and Secretariat are working on additional guidance for authors.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

This issue has been actively addressed since the TAR and is also identified as cross cutting issue for the AR5, with a cross working group meeting coming up soon.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

In case of errata IPCC uses a procedure widely applied in the scientific literature. They are published on the IPCC website along with the relevant section of the report. Currently no procedures exist for handling errors after approval/acceptance of a report. A process which involves the authors and IPCC-Chair/Co-chairs responsible for the report/chapter, the current IPCC chair/Co-chairs, governments, and possibly independent experts should be developed, taking into consideration the nature of a mistake and where in a report such an error has been discovered (underlying chapter, SPM, SYR).

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The way IPCC has communicated so far is very cautious and discreet for diplomatic and political reasons. A junior information officer dealt with outreach activities carried out by partner organizations and occasional press information notes and media requests. In the past the media did not put too much attention on the IPCC but October 2007 (announcement of the Nobel Peace Prize) marks a change in public opinion and interest. Another important turning point was climate gate and recently discovered errors or alleged errors in the AR4. At the very beginning of the year 2010 the IPCC was taken by surprise with an avalanche of media coverage and criticism. The IPCC had no capacity to respond to such a heavy public pressure. During that critical period a number of consultants were approached by various actors within the IPCC. That maybe the reason why is has been very difficult to speak with one voice and react in a timely

manner. Therefore a centralized solid capacity should be built in the IPCC Secretariat in terms of communication, with the flexibility of external forces during peak periods such as release of a report. In terms of communication the IPCC has to pay special attention to internal flows of information between different working groups, TSUs, the Secretariat and the Chairman's office but also between the IPCC and the scientific community, governments, relevant international organizations, and the public in general.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The IPCC model seems to be considered attractive to address other environmental issues and similar processes are established. Certainly the large network of scientists who are actively involved in research provides a huge advantage e.g. over an organizations with staff scientists or seconded experts.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The IPCC Secretariat maintains liaison with governments and other user groups. It collects and synthesizes input from governments and observer organizations to the IPCC process, arranges for publications, translation and dissemination of IPCC reports, and it provides assistance to developing country experts (travel assistance, but also through other activities to disseminate IPCC knowledge and encourage input to the IPCC process). The Secretary of the IPCC represents the IPCC at major intergovernmental meetings held at senior official level (at ministerial conferences the IPCC is represented by the IPCC Chair, a Vice-Chair or another member of the IPCC Bureau) and maintains the dialogue with respective Secretariats (e.g. Climate Secretariat, Office of the UNSG). The Secretariat develops the budget for the IPCC Trust Fund and is responsible for the financial management; organizes and prepares documents for Session of the IPCC, the IPCC Bureau and a number of meetings that cut across working groups (e.g. scoping meetings for assessment reports); and provides assistance to the IPCC Chair in carrying out his/her task. The IPCC Secretariat also designs and maintains the IPCC website (with dedicated pages for working groups to inform about their ongoing activities), but recently communication tasks have become increasingly important.

Until 2006 the IPCC Secretariat consisted of two senior officers (D-2 and D-1, provided by WMO and UNEP), two secretaries and an administrative assistant (the latter ones paid by the IPCC Trust Fund). The volume and scope of activities steadily increased and after a long debate in Plenary and Bureau, a junior information officer was recruited in late 2006, and in the past one and a half year a science officer, an administrative officer for budget and finance, an IT officer, and an additional secretary. A number of tasks such as the scholarship fund, which was established with the funds received from the Nobel Peace Prize, and part of the communication work are carried out by short-term and part-time staff. Staff costs are part of the IPCC budget and have to be approved by Plenary. Recruitment of staff follows strictly WMO rules and the final selection and appointment is by the WMO Secretary General. IPCC is also bound by WMO rules for short terms staff. These factors limit the flexibility of the Secretary of the IPCC to respond to arising needs such as the recent media debate.

In addition to the IPCC Secretariat the IPCC Working Groups and the Task Force have established their own Technical Support Units (TSU). The main role of the TSUs is to assist the Co-chairs in developing the WG Reports, to provide assistance to authors, manage the review process and finalize the Report for publication. TSUs are under supervision of the respective developed country co-chair, operate under the procedures applicable to their host institution, and are closed when the term of the Co-chair is over. They have no link with any UN organization and the relationship between IPCC Secretariat and TSU has never been clarified. Complications have recently arisen e.g. in the context of Freedom of Information Act because the TSUs are operating under their respective national law.

The IPCC Secretariat activities mentioned above in particular liaison and cooperation with governments, UN, media and general public have become even more important considering the increasing public attention on issues covered by IPCC. There is also a need for strengthened capacity in the IPCC Secretariat to provide more support for the IPCC Chair e.g. to foster cross working group cooperation and consistency. A more coherent and clear internal management and administrative structure involving the Secretariat and TSUs, would be desirable.

In terms of management structure the IPCC Chair has established an informal group composed of the Working Group/Task Force Co-chairs, the IPCC Vice-Chairs, The TSU heads and the Secretary called the E-team. However, in the recent past it became apparent that this rather large group which does not have any formal decision-making power is not able to handle matters such as the past crisis in an effective and timely manner. A smaller group which is empowered by the Panel to take decisions and to speak on behalf of the IPCC may be in a better position to react in a timely manner.

11. Any other comments

Very often the IPCC is being asked for updates in shorter intervals as the current two stage process allows. The IPCC has the instrument of Technical Papers which initially may have been intended for rapid updates, but according to current procedures Technical Papers can only refer to material already assessed in an IPCC Report. One may reconsider these rules for Technical Papers or define another form for fast track assessment if availability of scientific technical literature and the relevance of a topic suggest such an update.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead Author. Please note that most of my answers are related to WG1.

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

The Working Group 1 (WG1), where I worked, is mostly a scientific group, less involved in policy issues as are WG2 and WG3. We have NOT done any effort in identify policy questions.

2b. Election of Bureau, including Working Group chairs

I took no participation in this process, and I do not have an opinion on know how this stage is done.

2c. Selection of lead authors

I think that the process should be less dependent of government's indication. Many scientists are indicated by their political position and not by their competence.

2d. Writing of working group reports

I think this process is very well done, with no interference from political issues or regional or economical pressure. This is true for WG1.

2e. Review processes

The review process by the review editors is a nice process, but the review process by the governments is too prone to bias due to economical and political pressures.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

I think the preparation of the Synthesis report and SPM is done with NO bias. It is just a synthesis of the most important points in a report of more than 1000 pages.

2g. Adoption of report by the IPCC plenary

This is a very problematic process. Each country in the IPCC plenary is there to defend your own interest, not the collective interest or the science behind it. This is a pure political process that must be avoided. I was at the meeting were the IPCC AR4 report was accepted. The process was really terrible for all points of view. Negotiations drive by purely political issues is the main issue here. This must be changed.

2h. Preparation of any special reports

The special reports are more focused and should follow the same practices as the main reports, with the exception of the final plenary adoption by the IPCC governmental representatives.

3. What is your opinion on the way in which the full range of scientific views is handled?

I think that the full range of scientific views is handled nicely. In my IPCC WG1 chapter, not even crazy ideas were taking out of the report. The idea of cosmic rays could cause climate

change was taken seriously, even if nobody in the group have a positive view on the issue.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I think the governments have a very NEGATIVE role in IPCC. They must view the process as a scientific assessment. They must not try to bias the report to their own economic or political interest.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

I think that non-peer-reviewed literature must be as much as possible out of the reference list. Internal reports of national institutes or international organizations very frequently have a bias to reflect the view of particular scientists or institutions. Peer reviewed literature are not free from this issue, but the revision process frequently removes some of the excess in these political statements. A more detailed review process specially on citations must be put in place.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Although the IPCC AR4 report have done a lot of effort in properly handling uncertainties, the inherent uncertainties in climate science, impacts and effects are huge, and sometimes the report done recognize this properly. This is true especially in the global climate modeling issue. The modelers have a particular feeling that their models are the TRUTH, and they do not properly recognize that the models are very limited in scope and in terms of processes included. The resolution is yet far too coarse, and the parameterizations used make the model results very uncertain, and the modelers and the IPCC report do not recognize this properly.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

During the report writing phase, the quality assurance of data is basically let to be handled by the review process. The process of identification of errors can be improved. A more detailed review process must be put in place. Maybe selecting a group of 10-15 scientists for each chapter for a in depth review, before going to governmental review.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

This is another area that must be improved. Proper strategy of communication of results and implications must be put in place. A strategy for that must be carefully planned and put in place. The opposition from the “skeptics” will only get worse, as economical pressure on measures to control greenhouse gases will get stronger.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Actually I think that the process is quite fair and robust. I do not see any big problems with the whole process, other than the acceptance procedure by the governments.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

I am not in favor of a “permanent” and paid scientific body for the IPCC. This will make the scientists that accept that position as targets from the industry and the strong economical interests on not doing anything on greenhouse gas emission control.

11. Any other comments

I think that the IPCC process is quite fair and robust. Is a pretty depth insight on a key scientific theme.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

I am not sufficiently familiar with the details of these procedures to give valid answers

3. What is your opinion on the way in which the full range of scientific views is handled?

I have the impression, that the IPCC considers all scientific views, but does not consider in the recommendations views which are extreme, if there is good reason to disconsider such views. Overall, my impression is that a balanced assessment is given.

4. Given the intergovernmental nature of IPCC, what are your views on the role of

governments in the entire process?

I am not sufficiently familiar with the details of the working of IPCC to judge on the role of the governments and their influence in the process.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

As long as the sources of the data are published, all useful and relevant data could be considered in the preparation of the reports. However, as always in scientific work, if data is used, the reliability of the data needs to be judged. There is an increased level of trust for peer reviewed publications, since typically several experts have judged the validity of the claims - although also such literature should not uncritically taken at face value. For non-peer reviewed publications, the members of the IPCC using this data have to act in a similar manner as peer reviewers. If data and conclusions appear still to be valid under such enhanced scrutiny, then such data could be used. However, this should be indicated in publications using such literature.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Error margins or confidence intervals should be used as in any scientific work. If no precise values can be given, then a best guess is acceptable if it is clearly indicated. If recommendations are made, it should be stated why - in spite of a particular uncertainty - a clear recommendation is justified. Uncertainties should be carried over into the synthesis report in less detail than in the working group reports, but important statements - especially politically important statements, should state the level of certainty - not necessarily in a numerical form, but also in statements such as "with a high level of confidence".

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Since I have no detailed insight into the quality assurance process, I can not judge on this. With respect with the errors discovered and publicly discussed: As much as this is regrettable, in such a big piece of work, it is almost impossible to be fully free of errors. If errors are discovered, the IPCC should handle this very openly and publish, in which way - if at all - such errors have an impact on politically relevant statements and recommendations.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Openness is by far the most important point, especially if mistakes have been made. The actions of the IPCC are so highly visible, that it will be virtually impossible to hide things on the long run. I also had the impression that the reaction of IPCC was sometimes a bit too slow, so that rumors and semi-truths could develop. The IPCC probably needs - if it does not have one - an "emergency team" which could react within hours to problems arising.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

As far as I know this model, this seems to be a sensible approach and one should first make the experience before implementing alternatives.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

I do not know management, secretariat or funding structure sufficiently well to comment on this.

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

a,b: Not enough information to judge.

2c. Selection of lead authors

System seems fair overall. While local biases cannot be excluded, they probably neutralize overall. Selecting for competence is key, but regional or gender issues need to be considered.

2d. Writing of working group reports

The quality of the writing is mostly excellent. Probably as good as can be done in the limited space available.

2e. Review processes

Review process is painfully thorough for details, but needs someone (or a few individuals) who review the entire chapter and make sure there are no sections that fall through the cracks, and ensures consistency within and across chapters and WGs (the Review Editors"?)

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

Overall, very fairly, as long as actual "scientific" views are concerned, i.e., those that are in the peer-reviewed literature. Pseudo-scientific rants by so-called "skeptics" in non-peer-reviewed literature should not be given too much attention, but must be discussed in a "debunking section".

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

They play a key role as the ultimate clients of the report, together with the public at large. The WG1 report is maybe too much written for the scientific audience. It's a wonderful reference for ourselves, but is it really what policymakers need?

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

In the case of the WG1 report, with which I am most familiar, the authors have done a good job of referencing the relevant literature. Grey literature is unavoidable in some areas, but needs to be clearly identified as such.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

From a scientific point of view, of course one would like to see probability density functions given with every number, of course. Unfortunately, that is not actually possible in most cases, and even where they are presented they only cover specific types of error and ignore others. Most non-technical readers are unlikely to understand the intricacies of uncertainties, anyway. Probably, for the intended audience, statements like "highly likely", etc., with some kind of quantitative translation, are most useful, as was done in the last report.

Anyway, too much is made of the "uncertainty" issue. Economic policy is made in the face of massive uncertainty without anyone blinking an eye. Somehow the climate denial interests have created the impression that action requires certainty. The opposite is the case. We don't build aircraft to be safe in the conditions we are sure they will encounter, we build them to be safe even under conditions that they are unlikely to ever have to face.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I think that QA/QC is excellent. What other document of this size has so few errors? There needs to be a mechanism to acknowledge errors if and when they are discovered and to publish errata. This mechanism has to be identified in the book at the time of publication ("... for potential errors found after publications, please consult the errata page on our website..."), to dispel the myth that the reports are infallible dogma. This has not been handled well in the recent flap.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Things were ok, as long as they were going well. The IPCC system was not ready for a concerted attack by the malignant forces that used the various "climategates" to gain political traction, and the massive amplification of these attacks by the sensation-hungry media. Maybe a more professional team of "spin doctors" could help, but observation of how even highly professional politicians and organizations fail in such situations (Bill Clinton, BP) suggests otherwise. But probably IPCC should have a crisis team that knows how to best respond to attacks with honesty, competence, and some humility. They also have to make sure not to raise unrealistic expectations.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I feel that the cycle of WG1 reports is too short. In terms of policy-relevant science, I don't expect to see great changes from TAR to AR4 to AR5. We know climate is changing, we know humans are the main cause. We know that this leads with a very high probability to very undesirable outcomes. Uncertainty about the magnitude of expected change has not decreased since the first report and is unlikely to decline in 6-year increments. Actionable knowledge about regional change is also slow to develop. What is needed from a policy point of view is more emphasis on updating WG 2 and 3 reports, and using a slower pace on WG1 reports. Of course, as a scientist, I love the WG1 reports!

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Expert reviewer

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

- 2b. Election of Bureau, including Working Group chairs**
- 2c. Selection of lead authors**
- 2d. Writing of working group reports**
- 2e. Review processes**
- 2f. Preparation of the Synthesis report, including the Summary for Policy Makers**
- 2g. Adoption of report by the IPCC plenary**
- 2h. Preparation of any special reports**

1. The three step-review process is a good approach to find mistakes and get comprehensiveness.
2. A problem is the (formal) restriction on peer reviewed literature. Although this is from the scientific viewpoint the best solution for sound science especially for working groups II and III the IPCC would be half blind if only peer reviewed literature can be recognised: For a lot of areas (especially in developing countries for adaptation and mitigation issues) there exists no peer reviewed literature. But how to write on this topic without peer reviewed literature?
3. The SPM of IPCC is adopted by consensus. Consensus is on the lowest common denominator. This contradicts to one task of IPCC to send alarming signals if there is a new threat (which might not been seen in such a way by all).

The precautionary principle would be more suitable - if there might be a danger this is enough to warn even if not all agree.

3. What is your opinion on the way in which the full range of scientific views is handled?

There is a strong dominance on english written literature - because most (lead) authors don't understand other languages. But this restricts what can be written in IPCC reports (especially if only peer reviewed literature is accepted) - see also 2. above

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

They have an important role, but this is important for the acceptance of the IPCC reports. Maybe the only focus on consensus is too restrictive for some items (see 2. above)

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Especially for WG II and III non peer reviewed literature is necessary. Probably it could help to signal in the text if the reference is peer reviewed or grey literature.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

IPCC is quite transparent on that. See above what I wrote in 2. on the precautionary principle

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The new process to track comments of reviewers sounds promising. But we know that the work load is high so that it is not possible that humans make errors. For errors after publication it may be best to collect them on the IPCC website.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

IPCC has improved very much. I don't know how this works in languages other than English (or German).

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Contributing author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

I think the policy questions per se should not be identified by the IPCC, but by the United Nations Framework Program on Climate Change. This body is where the government policy is more strongly represented, and where the expertise for policy options really reside. The IPCC should and could address the questions originating in the UNFCCC and play the role of advisor, but it should not be the engine bringing the policy questions itself. For most scientists participating in the IPCC, the policy expertise is not present.

2b. Election of Bureau, including Working Group chairs

I think the election of the bureau members is roughly correct in the current processes. They are the ones that are responding finally to the governments, so it is reasonable that the governments choose the scientist that inspire more confidence to them

2c. Selection of lead authors

The selection of the lead authors should be profoundly revised. Governments should have no influence in this step. Actually, governments should have the strongest interests that the lead authors are chosen without any political interference, to assure the quality of the final scientific assessment. Lead authors should be chosen by the national scientific bodies in a election processes by the scientist, for instance by the American Geophysical Union for the US, the European Geophysical Union for Europe and by similar bodies. Scientist working on climate science are very well about the qualifications, expertise and honesty of their peers.

2d. Writing of working group reports

The reports themselves should be shorter, i.e. they should not represent an attempt to encompass the whole climate science in a single document. Although a comprehensive report on climate was perhaps reasonable and to be welcomed in the first states of the IPCC, it is not in my view useful any more to try to condense in every Report all our knowledge about climate science. The Reports should focus on answering much more particular questions posed by the governments, thus becoming much more efficient in advising the policy makers.

2e. Review processes

The review editors should be more numerous, be elected also by scientific bodies. The independence of the review editors from political interference is even ore important that for the Lead Authors. The review process should be completely open at all stages. The Reports could include dissenting views in areas where the reviewers feel are not settled, and made available on-line.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Bodies representing policy makers should be involved in the preparation of the Summary for policy makers, but in a different role than is happening so far. Policy makers or their representative should insist that their questions are being answered in the summary in a clear and comprehensive way, requiring clarification if necessary, but in no way should they not the capability to formulate those answers. This is one of the most contradictory aspects in the present structures of the IPCC Reports: the Reports are born out of the necessity of advice from scientist by the policy makers. It is absurd that policy makers themselves try to modulate or even change that advice.

2g. Adoption of report by the IPCC plenary

This step should be left to the UNFCCC. The IPCC, once the scientific advised have been issued, should has no further role to play. It would be the turn pf policy makers to accept, ignore, or reject that advice.

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

The present structure, with Leading Authors mostly writing the part of the Report in which they have expertise in, and therefore where most of their scientific work is focused on, leads to conflict of interest. It should be avoided, when possible, that Leading Authors evaluate their own work and thereby sideline the work of competing scientist that happened to be interested in the IPCC process or that were not selected by the current political selection process. I think it should be possible for the Reports to be written by authors not directly involved in their area of expertise, if they can draw on the direct expertise they thing they need their help. The final formulation of the report should be, however, lead by authors not directly involved in the scientific matters object of assessment.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments should not interfere in the IPCC process. It is obvious that a technical assessment report should be formulated without any political interference to assure the maximum technical quality. The political processes should be outsourced to the UNFCCC

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The literature contemplated by the IPCC authors should be mostly peer-reviewed literature, and within this category, mostly on 'established science'. By this, I mean scientific results that have stood the passage of a certain reasonable amount of time, say 3 to 5 years after publication. It is not really meaningful to include in the Assessment Reports scientific papers that had been published just a few weeks or months before.

Gray literature could be used as a basis of the assessment if great care is applied to assure its technical quality, and only on exceptional basis. If the IPCC feels that more research is needed in particular areas where no peer-reviewed literature is not available, the Reports should state this so, and recommend an expansion of research in those areas.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Uncertainty has been well represented in WG1 report. Not so in WGII. Many results described in WGII are based on very limited studies, simulations with just one model, etc, that do not faithfully represent the range of uncertainty. This also makes the whole IPCC Report inconsistent: whereas the Report by WGI includes results achieved with climate simulations performed by a whole suite of climate models, WGII is much more limited and includes conclusions that are not valid when the full suite of IPCC climate models is considered

7. What is your view of how IPCC handles data quality assurance and quality control and

identification and rectification of errors, including those discovered after publication?

Quality assurance and error identification is not existent, and even not desired in the present structure.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The communication of the IPCC Reports is quite biased. The Reports themselves, especially WGI, contains a great deal of caveats and in my view it is quite on the spot to include the uncertainties, limited knowledge. This has been totally ignored in the communication to the media. This point is, in my view, one of the main reasons, perhaps the most important single reasons for the travails that the IPCC processes is undergoing now. The media haven't fulfilled their role either.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The current structure is not sustainable, in my opinion. The credibility is damaged to the extent that many sectors of society do not trust the scientist any more. Therefore, the possibly sound scientific assessments would not be considered by policy makers that feel their popular support is not guaranteed. The only way to regain the credibility is in my opinion, to strictly separate the scientific assessment from the sphere of influence of policy makers

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

You may be interested in reading the article: Independent Agency needed. In IPCC: cherish it, tweak it or scrap it? Nature 463, 731 (2010).

11. Any other comments

Thank you for your efforts. I wish you all success

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

- 2b. Election of Bureau, including Working Group chairs***
- 2c. Selection of lead authors***

b and c. Lead authors and other very important positions should be mostly assigned by the various national science academies.

- 2d. Writing of working group reports***

- 2e. Review processes***

All outstanding questions or issues should be resolved to the reasonable satisfaction of all participants (not that every challenge has to win, but don't summarily dismiss issues without due diligence). The report should not be able to be finalized until all issues are resolved and documented, and that documentation should be made available to all participants.

- 2f. Preparation of the Synthesis report, including the Summary for Policy Makers***

Synthesis report should be approved by lead and chapter authors of the underlying report.

- 2g. Adoption of report by the IPCC plenary***

- 2h. Preparation of any special reports***

3. What is your opinion on the way in which the full range of scientific views is handled?

A lot of that depends on the chapter and lead authors, who may have too much control over inclusion of other ideas. Perhaps the chapter/lead author's decision could be overridden if enough other people on the author team agree to including the new idea.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments should be kept completely out of the writing process and the author selection process, and should be limited to funding the IPCC and the scientists involved.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Outline the amount of gray sources that can be used in any particular section of any report. For WG1, this should be zero; for WG2 and WG3 this cannot be zero, but perhaps make a top limit of 30% or something to that effect that is reasonable.

Make the deadline for accepting papers be the finalization date of the first draft. That way you can incorporate new research and still have a firm source list for the final stages of the report.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The synthesis report seems to reflect less uncertainty than the underlying reports/chapters.

As a separate page that accompanies the report, maybe you could include a page explaining scientific uncertainty and other important concepts for those people that do not have scientific backgrounds.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Pretty well, considering the size and scope of the reports. There should be a separate team of auditors that do a final review of all citations, sources, etc. before the report can be finalized.

Possible errors discovered after publication should be handled by some kind of auditor, sooner rather than later, and IPCC leadership should refrain from commenting before the auditor has announced his findings.

Any actual errors found should be corrected in the online digital copy as soon as possible, and a notation should appear on the website indicating the document version and any changes.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I have seen no direct communication between the IPCC and the general public, but I don't know whether this was by design or not.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Lead authors and other similarly important persons should be completely funded at their current salary or a competitive price, rather than assuming that they can complete their duties in their spare time. These scientists should have their parent organizations put them on "IPCC sabbatical", which should be funded as any normal sabbatical. The parent organization should have recourse to their respective governments to request partial or complete reimbursement.

This may have the added benefit of getting the report completed faster.

11. Any other comments

For all business related to the IPCC reports, email history should be retained. All significant parties should be assigned an IPCC email address and do their relevant business with that account.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Government representative, Author, IPCC Bureau member, Reviewer

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

- 1) Keep the influence by scientists as high as possible.
- 2) Keep all regions of the world in all groups, even if this leads to a very heavy workload for the best scientists from the highly developed countries.
- 3) Adoption by the plenary of the summaries is vital for political acceptance.
- 4) Reduce the number of special reports, as it often is too much a burden for the best scientists which are also involved in the main assessments.

3. What is your opinion on the way in which the full range of scientific views is handled?

- 1) I have the experience that working in IPCC leads to a much broader view for most scientists and helps to loose the blinders we all had at the beginning.
- 2) It is sometimes difficult to keep away the interest groups through the scientists they propose via the governments.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The involvement of governments in the selection and reviewing process is essential for the later acceptance of the assessments as well as the the United Nations flair.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Restriction to refereed publications in English. How can a person be at the cutting edge of science without being able to read English and publish in English.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The handling of uncertainties must not be uniform over all groups, but there must be clear definitions as I have experienced in WG I.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

- 1) The errors boiling up recently were all without any influence on the main points in the summaries for policy makers.
- 2) The chairman of IPCC, however, should be more independent (no advice to the own government, no involvement in a company involved in a similar field.
- 3) We need an independent very high rank scientist at the end of his personal career as we had with Bert Bolin.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

- 1) IPCC should refrain from continued active communication with the media during the work on the assessments. It should protect the scientists when needed.
- 2) The sponsors (WMO, UNEP) should be given a clear co-ordinated role when new assessments are published.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

- 1) All other conventions (e.g. UNCCD, CBD) would be glad had they an equivalent to IPCC.
- 2) The more important climate policy making will become the more accusations will emerge. Keep it scientific under all circumstances.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

I remember an attack by several countries during the Meteorological Congresses of WMO to get IPCC under more control by offering more funding via WMO. I have helped to avoid this also asked by the IPCC chairman at this time. A lean administration with donations by countries for travel and in kind secretarial support allows more independence than depending on a better budget by the sponsors

11. Any other comments

Do not change too much

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Support of model activities

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

The report writing process is a short term activity (< 6 years) and therefore the 'quality assurance' process has natural limits.

Also, the frequency of report (1/6 years) indicates that the report writing is a process that is not supposed to give a 'final' view of the report issues. It is perhaps possible to make these two aspects clearer to the public and policy makers.

Insofar as WGII/III reports are based on statements in WGI report, there should be a reviewing process of WGI authors.

3. What is your opinion on the way in which the full range of scientific views is handled?

I think that the 'likely'/very likely' attributes of the statements is good way to indicate the reliability of results. A 'very likely' statement may be totally wrong on the other hand due to insufficient knowledge or all kinds of errors. It may be feasible to make this clearer to the public.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I have no information on influence or pressure of governments on the report outcome. My Government seems to take it into considerations and seems to be willing to fund future reports. Maybe I am wrong.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the

literature used, including non-peer-reviewed literature?

Non-peer reviewed literature should not be taken into account.

Good results that come too late may be taken into account in the follow-up report.

Or, there may be an appendix that considers the non-peer reviewed literature with a clear indication of the preliminary nature of the results.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

WG I: Some more emphasis may be put on the reasons of uncertainties (observation densities; reliability of paleo proxies; role of realisations in numerical experiments).

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

reaction on existing or non-existing errors in the ARs may be improved by some kind or better organised of public relation office; interpretation of ARs in the papers should not be commented by IPCC organisations; this should be left to the scientists or others.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

As an artist should not comments his paintings (to my opinion) the IPCC should not comment the report. As said above, correctness should be commented, corrections provided also on paper.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

no

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

No

11. Any other comments

none

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

Point out why these particular lead authors (or at least the coordinating lead authors) have been chosen and how they were chosen.

2d. Writing of working group reports

2e. Review processes

(d) and (e) More focus must be put on quality assurance of non-peer-reviewed literature, although this is difficult. (e) in particular: reviewers need to point out which part of the report they actually have read (given that it is impossible to review thousands of pages), so that passages that otherwise might go through the process without adequate reviewing can be identified.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

(f) and (g) The procedure is probably obscure to the public.

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

Definitely adequate.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Too large, but probably unavoidable.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

There should be a possibility to include findings that were obtained after the deadline (example: lots of research on the Greenland Ice Sheet after the deadline for the AR4 had passed).

Obviously these results cannot be published on paper (since there needs to be a deadline), but it would be very useful if they were available on a web page, given that the same review process as for the "main" assessment can be ensured.

Inclusion of non-peer-reviewed literature: there is probably no way around if one wants the opinions of scientists and organizations from developing countries included, which I think is essential.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

It is important to point out the the kind of uncertainty in the WG1 report is of a different nature from the uncertainties encountered in the other parts of the assessment - in particular given the fact that there is mostly peer-reviewed literature in WG1.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Quality: focus on a kind of review process for non-peer-reviewed literature to avoid obvious errors. Identification and correction of errors: must be made as quickly and as comprehensively as possible, possibly with the help of a dedicated "task force" (where also "skeptics" should be represented). It is also important to explain where the error originated (wrong citation, typo; in the original publication, in the assessment report, ...).

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

There is room for improvement. It is essential that the public understands that an IPCC assessment is a summary of existing, already published literature rather than a clever move of the lead authors for more research money. Involve the media throughout the process.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

No, I think it is adequate.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

No.

11. Any other comments

Openness, openness, openness throughout the whole process is best to avoid any further "whatever-gates".

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None (user)

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

The intergovernmental status may include the bias of nominating candidates on geographical balance rather than excellence alone. Science and negotiated texts seldom make an ideal match. On the other hand a "purely" scientific setup might have generated less response. It could be improved by a two step nomination: governmental candidates should be approved by the respective national academies or scientific organizations resp.

3. What is your opinion on the way in which the full range of scientific views is handled?

While the IPCC results can be used as good reference you have the impression that climate change is featured as the sole paramount change the world is facing. Given its name and mandate this is obvious and legitimate. However to "restore" a balance among the challenges the world is facing (and some of them are likely to be more imminent and pressing than climate change) we would need IPCC-like structured reporting on land use changes and land degradation and on biodiversity loss and potentially on some more social changes like migration, urban/rural livelihood balances etc.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

While ownership and responsibility should be (inter)governmental the direct influence should be mitigated. See proposal above.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

I am not against the use of non-peer reviewed sources as I have experienced many irrelevant and even erroneous peer reviewed publications. This said quality control and a strong emphasis on impartiality is needed. IPCC should provide science and knowledge base and not the political interpretation or lobby documents.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

It is a valid and difficult issue as the political audience is not very receptive to uncertainty messages. However without clear assessment of uncertainty the scientific impartiality could be questioned. Ultima ratio rather communicate than omit the "users' guides for uncertainty".

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The mistakes made in this regard profoundly undermined the credibility of IPCC and harmed the community and the cause of science. The damage control was rather damage amplification. The lack of immediate consequences in a highly politicized environment kept the issue unnecessarily in the limelight.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

In this regard the success of IPCC made it vulnerable. As a reputed daily newspaper put it. Science became too political. It is very difficult to keep the balance. Impartiality would reap its benefit on a long run. The question is who is entitled to speak for IPCC. Many people refer to its results thus some of the communications which imply IPCC are not "home made".

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

See earlier answers for different nomination, less direct government control and focus on core mandate.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Certainly some more science control (independent bodies, scientific associations "peer review" could be thought of.

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

I have no insight into a-c. (In fact it would probably be a good idea to inform the lead authors more about these procedures that happen before the lead authors become involved.)

2d. Writing of working group reports

I thought the writing process was well-organised, I have no suggestion for improvement there.

2e. Review processes

The main problem with the review process for me as author was the excessive number of review comments we had to deal with - many of which were not very constructive. Some individuals submitted hundreds of review comments just to our chapter, questioning every other sentence. I would expect that with growing public profile of the IPCC, and especially after the media storm of the past months, even more review comments will be submitted next time, often not by those committed to improving the report but rather by those with a political agenda, e.g. trying to tone down every clear scientific statement. I feel that some thought needs to be put into the question of how the review process can still be very open and transparent, but at the same time protected from excessive "spam" that eats the lead authors' time and ultimately reduces the quality (by allowing less time to discuss the real issues and reducing willingness of scientists to participate - I decided I wouldn't do it a second time because it was such a huge time sink, not so much the writing but dealing with thousands of review comments). Somehow we need less quantity but high quality of review comments.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

I have no insight on this.

2g. Adoption of report by the IPCC plenary

I took part in the WG1 plenary as part of the government delegation. A very tedious process, but perhaps ultimately worthwhile since it gives a level of "ownership" of the report to governments. Here they have a chance to object to every single sentence of the SPM. For a scientist it is a strange procedure but I can see that it serves a useful political role to do it this way - as long as government delegates cannot compromise the science in any way, of course, but my impression was that at least for WG1, that was not the case. The science survived this process intact.

2h. Preparation of any special reports

No insight.

3. What is your opinion on the way in which the full range of scientific views is handled?

I think this is handled in the right way: where there is broad consensus, this is stated, and where there are differing views these are discussed. But this is an assessment (that is its value, after all), so a discussion of differing views can come to the conclusion that some are more convincing and better supported by the evidence than others. To sort the wheat from the chaff is exactly the role of such an assessment - it would be pointless to present all views as equally valid.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

As an author, I never noticed any government interference - we were completely free as scientists to write whatever was our own best assessment in our chapter. The role of government really came in in the adoption of the SPM in the plenary, see my response to Q2.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

My suggestion is to clearly mark different types of sources in the text. E.g. when giving references in the text, make those in different colours for peer-reviewed papers, reports, etc., so one can immediately see without looking at the reference list whether the source for any piece of information is a peer-reviewed paper.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I think the use of a calibrated uncertainty language, e.g. specific meaning of terms like "very likely" etc, is excellent and a positive example for other assessments.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I think the key problem with the two errors that were discovered (the Himalaya glaciers and the area of Holland below sea level) was that apparently no mechanism existed to publish a corrigendum.

To avoid errors in future, a more structured review process could be considered. I.e. rather than everyone being invited to review any part of the report they like, there could be specific experts assigned to review specific things - like a glacier expert from WG1 could have been assigned to review anything stated about glaciers in WG2. I agree that this is not easy to organise, though. There could also be a greater time lag between publication of WG1, 2 and 3, so that they can

build on each other. I think the lack of coordination between WG1 and WG2 was clearly what lead to the Himalaya error.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

In general, media outreach and public communication, e.g. through the IPCC website could be a lot more professional. Also I think IPCC should have taken a much stronger and active stance against some of the media disinformation. In the meantime, the original "Amazongate"-article has been withdrawn by the Sunday Times and an "Africate"-article has been withdrawn by the Frankfurter Rundschau (also based on a Sunday Times piece). But this was because individual scientists complained to these newspapers and/or media watchdogs. The IPCC, to my knowledge, never lodged such complaints about wrong articles, but in my view it should have systematically asked for corrections of false allegations. The IPCC appeared to be completely helpless in view of the media campaign against it - no private company would have dealt with this situation in such an unprofessional way.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Overall the IPCC assessment model is excellent in my estimation, and a good role model for other fields (like biodiversity). It just needs a little fine-tuning as discussed in the other questions.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

My impression is that the IPCC is understaffed and its management needs to be strengthened, given the growing importance of its role. The reports themselves are fine, but the IPCC management failed to properly respond to the public media onslaught. See also point 8.

11. Any other comments

Much of the criticism of IPCC is based around the idea that it is "political", which is not the case. I think any reform of its procedures needs to emphasise and clarify its scientific independence from governments. (This does not imply that the final SPM should not be adopted by government delegations, see my answer to Q2 - that may well be a very useful process that does not compromise the scientific integrity.)

1. What role(s), if any, have you played in any of the IPCC assessment processes?

[None specified]

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

As far as I know, most of lead authors have been selected from a narrow specific research community. I recommend selecting from a more wide spectrum of researchers.

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I think that governments should support the entire process of the IPCC reporting and reviewing. On the other hand, they should not influence the report itself on the basis of national interests.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Non-peer reviewed literature should not be included in the IPCC assessment report. More extensive literature database, to which authors can access freely, may be helpful to handle a vast amount of literature. Alternatively, is it possible to collaborate with IT companies such as Google?

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The uncertainty can be, to some extent, reduced by inviting more authors to the writing of assessment reports.

7. What is your view of how IPCC handles data quality assurance and quality control and

identification and rectification of errors, including those discovered after publication?

As to my research area (ecology), credibility of each statement in the IPCC assessment report is doubtful, because it usually depends on only a few papers. For example, it is extremely difficult to estimate how the future global warming would affect biodiversity at the global scale.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I think that IPCC has done well. I recommend publishing in more languages: i.e., not only UN official languages. It helps the media in many countries.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

IPCC assessment reports, in general, include regional chapters. If IPCC has regional branches, these chapters can be written by each branch. This may reduce a burden of the headquarter and enhance regional studies.

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

work well I guess

2b. Election of Bureau, including Working Group chairs

I cannot judge

2c. Selection of lead authors

I have the impression that this works quite well

2d. Writing of working group reports

from what i know this is a very careful process

2e. Review processes

see d.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

I do not know enough to judge

2g. Adoption of report by the IPCC plenary

same as f.

2h. Preparation of any special reports

same as f.

3. What is your opinion on the way in which the full range of scientific views is handled?

I think that a careful reader can find the full range in the report. The summary of course gives a synthesis, where extreme rare opinions to not have their place.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I think they should definitively NOT have influence on the process, since governments are not only purely idealistic representations of the public, but also lobby-infected.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

There should be a policy for the use of non peer-reviewed literature, that "hard facts" drawn from such literature that make it in the IPCC should be backed up by a proper citation at least in one level.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I think this is very clear, uncertainties need to be included of course, if possible with probability distributions...

7. What is your view of how IPCC handles data quality assurance and quality control and

identification and rectification of errors, including those discovered after publication?

I cannot judge.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Astonishingly many people do not know the IPCC. I really have no idea why.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

One could ask scientist from other fields, e.g. mathematicians for the economic questions, biologists for social questions -- as advisory authors, such that the field does not get dominated by experts who have their view fixed...

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

I cannot judge

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None (provided critical remarks to reviewers)

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

The procedure has in general not changed, nor the persons! Therefore I expect same problems as with AR4.

3. What is your opinion on the way in which the full range of scientific views is handled?

Before starting with 2 and 3 finish up the first issue: Basic observations of climate change!

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The governments should completely left out of this undertaking!

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

As larger the number of referenced papers is less time the authors could spend to read them! Therefore the authors for the AR% should read and quote only well referenced reviews and original work but increase also the spectrum of "opinion".

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The WG reports should be published first and after some time of discussion the writing of a synthesis report could begin.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

IPCC is not able to quality control all data. Rather: This should have been done by the authors and should be documented accordingly.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

IPCC is not providing carefully weighted answers! Media must be taught to be careful in publishing any sensations.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

As mentioned above: There must be a longer break between publications of the science summaries and the synthesis.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

NO

11. Any other comments

Be careful and ask for a second review of the basic science by other people than those now in the game.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Reviewer

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

Well.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The role of governments is obscure. No-one is quite sure if this is a scientific or governmental process, though it looks mostly scientific to me.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The IPCC should not be paranoid about using non-peer-reviewed literature but it should be careful about it, and it should make its policy clear.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Uncertainty should be fully considered in the detailed chapters but the presentation of the SPM and synthesis report (if done) needs to strip away some of this.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

There have been so few instances of this that it is hard to judge in general. A simple errata page on the IPCC website should suffice.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Communicating with the media and public is not the IPCC's central role and it should not expand on it.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The burden on scientists is probably too great. Perhaps there should be a recognition that some basic areas are already so well covered in previous reports that they do not need updating.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

Having all the reports at the same time is silly.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead author in a special report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

process established is appropriate

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

process is not transparent: There is a big procedure around nomination on experts through governments and others, but finally a very limited number at the person in the IPCC Bureau are deciding. Their choice is even not restricted to the persons nominated but can incorporate also

scientists of their own choice

2d. Writing of working group reports

2e. Review processes

Review process is painful by definition but greater administrative support by the secretariat for handling would be extremely helpful

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

It depends very much on the quality of the CLA how the process is handled. Yet, co-chairs do serve as somewhat monitoring entity allowing to interfere when CLAs are not delivering well

Incorporation of Developing Country authors remain a challenge. Possibly, financing them a longer period of time with potentially a longer stay in developed countries may enhance their input

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

In my area, policy, non-peer-reviewed literature is essential for latest information and comprehensive review of state of the art.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Government reviewer

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

d. and e. It should be assured, that authors and reviewers of the articles are somehow neutral, i.e. not directly dependant or sponsored i.e. by the producers of special chemical substances and thus not free in their opinion making.

The participants structure should be well balanced, so that personal interests can be excluded to a great deal.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

For scientific basic research results, like for GWP, atmosphere measurements or other basic research done by universities etc., peer review is a usual thing in our opinion.

Peer review is a different question for information about new techniques or measurements on technical devices. There are informations about new techniques or measurements which are not necessarily peer reviewed and not foreseen to be. It would be a loss of information if here only peer reviewed literature would be allowed. Here also the time factor needs to come into account. On the other hand also the information in peer reviewed technical articles needs to be validated carefully.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

CLA

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

Clearly there must have been problems in the Review processes as some small (but significant) mistakes crept into the final report which damaged the reputation of the overall project.

3. *What is your opinion on the way in which the full range of scientific views is handled?*

As an outsider, it appeared that the IPCC did fairly represent the best scientific knowledge of the process.

4. *Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?*

5. *Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?*

The use of non-peer-reviewed literature is necessary but requires extra care and scrutiny and a form of peer review process within the IPCC. On the other hand, not all peer-reviewed work is beyond reproach either!

6. *What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?*

Seems fine.

7. *What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?*

The handling of the errors in the reports reflected poor judgement. One should have acknowledged that mistakes were made, tried to see what procedures failed, and then moved on to rectify the procedures.

8. *What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?*

The chair of IPCC appeared not to acknowledge that mistakes were made and this damaged the integrity of the process.

9. *Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?*

I doubt there is anything better available. But the mistakes made need to be rectified.

10. *Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?*

11. *Any other comments*

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

d) f) the working group reports should cross-reference each other as much as possible and therefore cooperate more closely, this should be most intensive for the synthesis report.

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

special report on adaptation of natural resource management (forestry in particular)

3. What is your opinion on the way in which the full range of scientific views is handled?

better account for full range of opinions, there is a publishing bias also in the best journals (not that the articles are not good, but there may be similar studies with contrasting results that may not be published in a similarly high-ranked journal and therefore seem less sound).

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

governments should provide input (experiences, available programmes etc.) but only intervene at the end of the process

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the

literature used, including non-peer-reviewed literature?

if the literature is not peer-reviewed, then the authors of the chapters should do a peer-review themselves

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

be more clear about the uncertainty levels and more strict ==> the likely, very likely...
classification of uncertainty suggests more certainty than a clear number of e.g. 80% certainty

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

errors should be corrected and made publicly available, but there will always be errors

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

be more cautious, scientific and less panicking although the media likes it and it provides huge media coverage for the IPCC, however, it is important to be clear about the risks etc. ==>
difficult balance

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

none

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

None

11. Any other comments

none

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Reviewer, CLA

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

- 2a. Scoping and identification of policy questions*
- 2b. Election of Bureau, including Working Group chairs*
- 2c. Selection of lead authors*
- 2d. Writing of working group reports*
- 2e. Review processes*
- 2f. Preparation of the Synthesis report, including the Summary for Policy Makers*
- 2g. Adoption of report by the IPCC plenary*
- 2h. Preparation of any special reports*

I think the scoping issues have changed over time. One of the most significant changes was the acceptance of the issue of variability that occurred in the 3rd assessment. The review process was pretty watertight in my opinion - one did not know who the authors were or who the other reviewers were. I felt that my comments were taken on board and that I made a meaningful contribution. I felt that IPCC in fact has undervalued reviewers - particularly in relation to recognition following the Nobel Peace Prize in 2007. I think reviewers should have been honoured explicitly because as it now seems, the quality of IPCCs work depends as much on the review process as the writing process - perhaps more so. I felt that the ZOD and FOD for the 4th assessment were very poor and I had to do a lot a lot of work to reform them - like being a journal editor with a bad but worthwhile paper.

3. What is your opinion on the way in which the full range of scientific views is handled?

This was not really an issue in the WG2 work that I saw. There is very broad scale agreement that significant warming will be bad for many areas of food production. For me the problem was that issues were left out - such as food and fodder quality - but this is because of lack of research. I hope the situation will be better for AR5.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I have no comments to make as I have not been involved in this. However, I think governments should be made to honour their commitments to support IPCC scientists in terms of travel support etc.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Non-peered reviewed literature should be kept to a minimum - the argument being that if a topic is important enough it will be in the white literature. I non-peer reviewed literature needs to be used it should not come from NGOs. This would allow reports from UN agencies (eg. FAO) to be used.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I think that IPCC has been very aware and careful about this. With respect to models there needs to be more inter-model comparisons but in the WG2 reports that I saw, a very wide range of data were used and these were compared with models. I think IPCC needs to be generally right more than it needs to be precisely wrong - and I think this is overwhelmingly the case.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

In a report of 1000 pages it is impossible not to have a few small errors - as mistakes made in good faith. Newspapers do this all the time and their errors are accepted and forgotten. IPCC is subject to a deliberate campaign to discredit its work and must be much less defensive in its responses. Vested interests have tried in the past to discredit and postpone the implementation of policies in relation to cancer and smoking, ozone depletion, nuclear winter and now climate change.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I think IPCC needs to use more modern media such as YouTube rather than these mammoth reports which are within the scientists' comfort zone. see <http://www.youtube.com/watch?v=F1IWkbU0SG4&feature=related> for an example.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The IPCC needs to produce more shorter special reports that can keep the media interested rather than the 'world cup' approach of a report every four years. I know they do other types of report but they are not so well covered in the media.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

No

11. Any other comments

I think IPCC should find a way to acknowledge the contributions of reviewers that have had a consistent input over two or more reports.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Reviewer, contributing author, lead author. Also review editor of a special report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

The scoping of questions happens largely in a closed "club" of insiders that is inadequately transparent or open to the wider research community. There are several critical issues that have never been included and it has been incredibly difficult to break into the ranks and get some attention to topics - mostly in relevant social science fields (e.g., communication of CC, behavioral science issues, political science aspects).

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

Selection of authors, writing of reports and the review process I find stringent, clear and with high standards of accountability.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

I think it's handled very appropriately.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The IPCC is a strange hybrid. Therefore necessarily messy. But also necessary to get buy in. I think the quality of reports is exceptionally high.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

broader inclusion of topics and a more transparent way of getting relevant science considered and heard in this process would be essential improvements.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

the IPCC needs serious communication help on all of its science, but I think the growing efforts to standardize and harmonize use and interpretation is handled as well as one might expect given the diversity and size of the relevant research community,.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Absolutely fine, with human foibles simply not entirely avoidable. Good gracious. If every other area of science were scrutinized this carefully - we'd find a lot more mistakes and misinterpretations. It's all overblown because of the nature of the politics of climate change.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Terrible. The communication is handled like any other problem, and therefore bound to fail. IPCC needs actual communications experts, not just a bunch of lay communicators or a bunch of PR people. It's just a lot harder than that.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Reviewer

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Here the influence of politics is detectable in the caution with which questions are formulated (I believe questions should be allowed to be provocative, as long as the answers are rock solid).

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

good team

2d. Writing of working group reports

2e. Review processes

good experience, arguments are being picked up, consensus is sought, the process from zero order draft to the final version makes sense.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

according to my experience, the lead authors try to reconcile opposing positions based on substantial arguments prevented. Of course, positions not underpinned by such arguments play no role in the deliberation process. I found it more open to individual critical positions than expected, except for the weakness of the scenario narratives which seemed to be a political taboo at the time of AR5 and is not handled outside the IPCC for AR 5.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

It is shameful to see how they negotiate over unpleasant details of the summary for policy makers. I recommend everybody to study the (hardly affected) full text. Nonetheless the intergovernmental character is important to provoke policy reactions.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Based on past experience, not peer reviewed data should be handled with care, for instance by an internal peer review process. I found the literature used pretty comprehensive, in particular since every review author can and will name additional references together with her/his input. For social and economic data, their reproducibility is not a priori given, and diverging interpretations prevail. In these cases diverging options could be presented without taking a stance on which one is endorsed: unlike in natural sciences, in social sciences different mutually exclusive "truths" can coexist for a long time.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Data is inherently a qualitative characteristic, and the characterisation by ordinal scales is appropriate. Giving cardinal figures to characterise the different classes is not adequate from a theory of science point of view - it could only be acceptable if understood as a kind of interpretation to help number crunchers better understand what the classes defined mean; the figures as such should not be taken at face value.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

My impression was that - as a rule of thumb - data are handled with precaution, and mistakes are admitted, resulting in a search for their sources and the attempt to avoid similar events in the future. However, IPCC spokespersons are right to bluntly reject those voices which call the whole of the results in question based on a very limited number of mistakes, in particular as none of the mistakes affects the basic messages.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

In my country the IPCC is broadly covered by media, there no deficit detectable. IPCC members are involved in public education on climate issues, also good. In future there might be more need for climate scientists learning instead of teaching, in particular when adaptation strategies and the valuation of impacts are discussed (the level of economic literacy seems to provide significant room for improvement).

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

No. Improvements are always possible, but I see neither a need nor an option for an alternative process.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

funding structure: in my dream world, the IPCC would be funded by an independent international foundation with interest in the quality of work, but not in the content of results. That would help to limit undue influence by (public) funders.

11. Any other comments

My impression is that with sourcing out scenario development IPCC has taken a major step to overcome what was - from my point of view - the weak point of the scenarios: the link between storylines and models. However, IPCC runs a risk by starting with forcing calculations and then choosing appropriate stories, as this narrows the range of possible futures which can be considered. Unexpected events are thus rather ruled out, which is misleading at least for long term scenarios.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Contributing author, participant in a Scoping Meeting

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Policies concerning sustainable land use not sufficiently addressed

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

Too much exclusive consideration of peer-reviewed literature versus grassroot-level and other grey literature

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Non-peer reviewed references not sufficiently included.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

7. What is your view of how IPCC handles data quality assurance and quality control and

identification and rectification of errors, including those discovered after publication?

Just correct any errors, this is normal

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Contributing author, lead author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

I believe that the report was very thorough in assessing the current state of climate change. In order to avoid the very few mistakes that occurred I believe the lead authors should be supported on a technical, i.e. very practical basis and there should be an additional review tool given to the lead authors which is the following: Each lead author should be able to request a specific review of a certain paragraph he/she wrote by some other lead author of another chapter. This is a very specific and small-scale review process that would help avoid mistakes already while writing the report.

3. What is your opinion on the way in which the full range of scientific views is handled?

The IPCC is supposed to provide an assessment of the scientific knowledge on climate change. Even though it needs to take all available information into account, it is not a review of all

available information, but provides careful assessment of the state. In order to be able to make reasonable and useful statements, the consensus of say 99% of all climate scientist should be presented not all 100%. In my opinion, this was well achieve in AR4.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The role of governments should be as small as possible. The signing of the SPM however is crucial in order to increase acceptance of the document.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Non-peer review literature should be used as little as possible and needs to be openly available when used.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Uncertainty assessment should be provided for a reasonable range say between 25% and 75%. Outside of this corridor reasonable assessment of for example the probability of occurrence of a certain event is not possible. It is however possible to give scientific information about the impact of the event, should it occur and whether it is at all possible that it occurs. This is the strategy I suggest for handling risk and information about unlikely events. The IPCC should NOT give only their best guess, but give as much information as possible about worst case scenarios. This is a conservative strategy for society which should be undertaken.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The IPCC has done an excellent job on this. The mistakes that occurred were minimal.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Currently the IPCC bureaus are very defensive with respect to the mistakes made in AR4. This is not necessary. On the other hand, Patchauri has claimed that it is impossible that the IPCC makes mistakes and this is wrong and was not good to say. The mistakes were small and did not touch upon the important statements of AR4. This should have been communicated. The IPCC currently has not means to do press work and this is a problem for an organisation as big and as unique as the IPCC.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The process should NOT be changed fundamentally.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

A small budget for lead authors to reduce their work load and thereby improve the quality of their work.

A press department for IPCC.

A specific small-scale review tool as detailed under 2.

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

partly as a desirable bottom up and scientifically sound process =strength, partly imposed by politics/economic drives = weakness

2b. Election of Bureau, including Working Group chairs

driven by politics, but that is OK if the elected chair is an independent person

2c. Selection of lead authors

same as b

2d. Writing of working group reports

only related to WG1: I think that all lead authors did an excellent job in organizing and integrating a vast amount of information. It is possible to use any WG1 chapter as a valuable source for teaching physics of climate and climate change at an university.

2e. Review processes

very detailed and deep including the changes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

too much political influence

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

some are very useful and highly pedagogically

3. What is your opinion on the way in which the full range of scientific views is handled?

the only possible way is the use and citation of peer reviewed and published work. This will guarantee that only scientific work which was already indepth quality assured is put together in the report

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

much too strong, governments should take the reports after their final preparation and base their decisions on that contents. However that would require a detailed presentation of all possible changes/interpretations/options/ in a neutral and not prefiltered version.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

no non-peer reviewed literature at all

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

there are clear and strictly mathematical ways to work with and quantify uncertainties basically coming from statistics, these should be used. If two or more results are to be compared error bars are indispensable. Sometimes uncertainty can only be assessed subjectively, this is OK e.g. in view of Bayes statistics, this should be indicated or several subjective measures can be combined.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

It is not the job for IPCC WG's to handle QA/QC of data, this is the job of the individual contributors. If there are erroneous data used in a publication cited by IPCC this could be handled in a similar way as in normal publications.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The general problem is that the media drive the communication and not vice versa,

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

One possible suggestion would be to avoid the tight timing for the reports of all three WG to appear more or less at the same time. One option could be to introduce a delay between the different WG's to allow one group to pick up latest results from the other two, e.g. WG1 to work with/on other scenarios/questions posed by WG3 or WG2 and vice versa.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

No

11. Any other comments

none

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Contributing Author, Review editor. Also Lead author of a special report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

My main suggestion would be to ensure author time commitment and support staff, at least for the more complicated chapters. Quality suffers when none of the other work commitments is reduced during intense writing times. CLAs need professional guidance for management of the writing team.

3. What is your opinion on the way in which the full range of scientific views is handled?

The difficulty lies in the difference between "reporting" and "assessing". In assessment, there may be differences in analysis that cannot always be decided easily; a more systematic way of documenting these is needed.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Many emerging topics eg. on technologies require extensive use of reports and non-peer-reviewed literature. A workable support structure needs to (1) ensure the material is easily available (2) has been assessed to be necessary and of described quality. Most importantly, authors need to be allowed the time to work through previously unknown literature

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Time pressure rules often.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

There need to be ways for quick assessments, updates and spokesperson responses backed by scientific statements.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Rather than writing comprehensive topical reports I would advise to answer a (long) list of specific questions.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The TSU (WG3) seems overloaded with work to the level where practical support is almost impossible. The CLAs need to have professional management strategies. Assistants have to be funded for writing teams. CLAs and some LAs have to receive salary compensation for a relief of duties during some writing periods so that they find sufficient time. CLAs have to commit to dropping other tasks during some times.

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Reviewer

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

I believe that IPCC chose correctly the best lead author and editors, but a bit of more transparency is welcomed, i.e. criteria that lead to a choice should be better declared and explained.

I believe that a FAQ section should be expanded, where FAQ has to be requested by governments, media and the general public.

3. What is your opinion on the way in which the full range of scientific views is handled?

I believe that the IPCC scientific work is sound and well done.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Not relevant. But not clearly defined, too different between countries, not easily understandable by the public. In particular, has to be clarified the role of governments in the selection of authors and reviewer, as well as for the final approval of the SPM statements.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The most frequent critics and arguments raised in grey literature and non-peer review should be directly answered, although if they are weak or silly (i.e. cosmic rays, sunspots, etc).

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I suggest using a “supplementary material” section to add more on the relative uncertainty of different statements.

In case of lack of accord on some issues, could be used techniques for expert eliciting consensus, in order to assess the percentage of IPCC authors and reviewer expert on that field that agree/disagree on the statement.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

A major effort should be done in order to clearly answer to all the critics raised after publication, in order to better highlight the relevance of the error, his relative importance.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The communication with the media and general public must be substantially improved, both in terms of timing and efficacy. I believe that an effort should be made to write in the reports section or chapters section that could be directly used by media and general public, such as:

- clearly and directly answer to the most common arguments used by sceptics, contrarians and deniers, also if are arguments outdated, weak or silly.
- write more on the history of how climate change science evolved during last decades, comparing the type and number of scientific uncertainties still important today with that of the past.
- write a summary for media and public, using their language: has to be shorter than the SMP, made by top science reporters, with all the statements approved not by governments but by scientists, and translated in the 30 most used languages.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

NO, I believe that the IPCC process is sound and there are no alternatives

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

No

11. Any other comments

I believe that IPCC should ask a formal consensus and approval of his work by other scientific organizations (i.e. National Academy of Science from different countries)

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Reviewer of a special report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

follow more the policy driven questions

2b. Election of Bureau, including Working Group chairs

open voting system

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

more public review

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

let this be done by a separate body or even outside IPCC; why would policy makers summary be different, Is is summary for dummies or summary for politics. Too much expectation and pressure on this, while the REAL IPCC work has been done.

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

good

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

should be de-linked. The national experts should be independent

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

make a separate box for 'grey' literature.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Not very useful in practice. The 50% uncertainty is by people explained as 'should you take a plane if there is 50% chance of accident?'. But in the case of climate science and mitigation there are many ways to increase mitigation etc. So, it is not a matter of what happens next day. I suppose there should be an explanation what in practice a certain uncertainty means

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

should happen more frequent, there are always 'errands'

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

good

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead author of a special report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

I have no suggestions for improvement. I think the process is excellent.

3. What is your opinion on the way in which the full range of scientific views is handled?

Handled the right way.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The governments appoint members and can ask any review question they want.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Stay away from non-peer-reviewed literature.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

no suggestions

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

no comments

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

communication is fine

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

no

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

None

11. Any other comments

The IPCC process should be kept clear. And the role of the IPCC should be repeated over and over to avoid common public misunderstandings

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

Industry has been essentially omitted though vast knowledge and experience from relevant fields may be found there. Points b,c,e and h.

3. What is your opinion on the way in which the full range of scientific views is handled?

Again, industry knowledge and experience need to be drawn upon. Science at industries, even very basic, encompasses building and handling of very large computer models, measurement techniques, analyses of instrumentation errors. Also, almost all instrumentation for remote sensing (radar, satellites etc) and ground based meteorological, oceanographic and climatological measurements are developed by industries. Use their knowledge.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Democratic principles must of course have a final say, but science, including industrial, should dominate all lower levels of this process.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Peer-review is certainly fundamental, but the very concept is not without its faults. Involve top-class individuals from fields outside the inner circles of academic science in reviews.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Handling of uncertainties should be very open, without looking at problems of psychological and pedagogical nature. This has not been well handled so far.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Essentially the same principles as used by software companies may be considered in this age of fast-moving communications and decisions. Of course, at the final stage prior to political decision making the rate of revisions must be limited.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

This is difficult and nothing will stop exaggerations by some media. Maybe involvement of professional communication staff within IPCC is required.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Not really, but UN and its many sections seems to work well in cases like WMO where standardization etc is the goal. UN will not be effective when the scope is larger and where countries span from the Maldives to China in an attempted democratic process. IPCC may continue, but lesser groups similar to the economic groups G8 and G20, should be allowed to move forward even in the areas of climate, global energy and global environment!

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Larger involvement from industries scientific bases.

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Provider of data and models to assessments

2. What are your views on the strengths and weaknesses of the following steps in the IPCC

assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

I think the system needs far more transparency. While understanding the necessity to have meetings which have limited attendance, the method of selection, and the reasons why some are invited (and some are refused attendance) needs to be recorded and made public.

3. What is your opinion on the way in which the full range of scientific views is handled?

I am comfortable that the IPCC reports need to represent scientific consensus, and do not need to report all the outliers.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I think the role of governments rather detracts from the clarity of the message, and leads (rightly) to the accusation that material is not solely based on scientific consensus.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

I think it ought to be possible with the next report to do much better in tying each and every assertion which is based on primary literature to a direct citation to an electronic resource, which can be checked. Each citation could also be "typed" (that is classified), so it would be possible to immediately calculate how much the conclusions of any portion of the report relied on primary, secondary, and grey (etc) literature. Doing this may rely on computing technologies which are not familiar to the main body of practising atmospheric scientists, but it would be relatively easy to do.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

In general, I think the process handles uncertainty about as well as it can. There is a bit of Rumsfield bias though: the report could be even clearer about the possible implications of predictions about which we have little confidence (for example, the range of possible sea level predictions, while very uncertain scientifically, are incredibly important socially and

economically, and the reporting somehow needs to sample/review those kinds of predictions rather better than done thus far).

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I think in this day and age there is no reason why all errors shouldn't immediately result in updated versions of the primary report. The provenance of all changes could be clearly (and publicly) recorded. Transparency is all!

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

"Damned if you do, and damned if you don't".

The issue to grapple with here is how much the IPCC machinery is about communicating about the construction of the report, and how much it is about communicating the conclusions of the report. Clearly we need to do better with both aspects, but it's not immediately obvious how to do the latter.

The former, however, could be done much better (more stories about how the IPCC works, and how many people are involved, in each and every country), and combined with transparency of method, should provide a much better provenance story: why folks *should* believe the IPCC provides the best and most accurate synthesis of what we know.

(Which is a different story to the one which is about communicating what we know ... and I think that depends on charismatic knowledgeable individuals with the time to communicate, and in practice that will depend on national funding.)

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The only other option I can see is to do it via "selected representatives of national academies", who would then have to get their national academies to deliver some sort of "sign-off" agreement (as opposed to their governments delivering the imprimatur).

But I don't much like that method.

I think the existing methodology coupled with better transparency, clearer provenance of conclusions, and a lesser profile for "government officials" in agreeing wording, is about as good as it's going to get.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

See below for something with potential funding implications. Apart from that, I do think the IPCC secretariat needs to do public relations better as discussed above, and that probably means more folk with appropriate skills.

11. Any other comments

In what's written above, there is an implied agreement with the seven-year(ish) "report" methodology, but it's more implied than actual. I think it ought to be possible to have a more regularly updated synthesis.

From a communication point of view, one has a trade-off between a regular drum-roll of information, and the punctuated equilibrium of big messages at lengthy intervals. However, it's my personal belief that we can no longer rely on the impetus of infrequent messages to engender change (and I believe change is needed).

So, I would want to see some funded sustained effort (chapters could be updated every year, with new syntheses each year) and this could only occur with more long-term funding. However, we would need to avoid having folks whose career it was to be "IPCC authors" - rather, it could be achieved by annually selecting (transparently) some folks (and a new chair for each group) to "retreat" (e.g. to something like Newton institutes) for a month or two and write new updates. Hopefully being selected for such a thing should become a badge of honour (but one you couldn't do year in year out).

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Reviewer

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

which procedures are used for? which requirements for lead authors (papers, h-factor...)? No transparent procedures.

2d. Writing of working group reports

2e. Review processes

the method for gathering the reviewer's comments is not so efficient and many times the lead authors do not take into account the comments.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

the different chapters start to be really complex and the peer review does not work so efficiently.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The main issue is the synthesis report where the governments play a major role.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

I do not think the use of non-peer-reviewed literature is a good option. The review period should be longer than usual.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

It seems reasonable

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

This is a big issue. All the journals should handle this problem, assuring the availability of the data used in the papers.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

No good idea for improving it

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

An interesting idea could be to ask the support from the different editorial boards providing short reports every 2 years. The IPCC process produce a too large temporal gab between the date of the last quoted paper and the date of publication of the IPCC report.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

No

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Expert Reviewer, CLA

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Done very thoroughly (scoping meeting)

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

I know of no other piece of scientific writing that is so thoroughly reviewed.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

(insufficient data to respond to other points).

3. What is your opinion on the way in which the full range of scientific views is handled?

It is done thoroughly and comprehensively.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The governments must play a significant role to ensure that they consider the reports "their own". My second-hand information indicates that the buy-in by governments works without compromising the scientific quality.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Handling the peer-reviewed literature is done well, including the procedures for handling papers that are being reviewed while the AR are drafted. Dealing with grey literature "simply" must follow the protocol.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Is handled systematically, comprehensively, and consistently across all of AR4.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

My second-hand information indicates that quality control within Working Groups works very well. Quality control across Working Groups seems to have worked less well; post-publication handling with errors has been insufficient. IPCC needs procedures for this.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Generally the standard has been very high. I advocate strict adherence for IPCC to restrain from making policy or political suggestions.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Clearly it would be desirable to have a speedier process that is less onerous on the scientific community. But I have not yet seen anything quicker and simpler that commands the same level of respect. We must make sure, though, that the burden on people does not increase further.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Insufficient data to comment.

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Reviewer, Government Focal Point, principal delegate to Working Group and plenary meetings

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Scoping for AR4: very impressive, nevertheless too political. From a scientific perspective, but also from a political perspective, climate variation should be more central rather than the human influence on climate

2b. Election of Bureau, including Working Group chairs

Election of the bureau and lead authors is extremely critical. I strongly recommend obligatory declarations of interest; stronger rules on policy neutrality; active awareness raising on this issue in scientific communities; formal IAC involvement to achieve this.

2c. Selection of lead authors

2d. Writing of working group reports

Writing process – strong: the availability and dedicated commitment of many excellent scientists. Weak: the sheer unbearable work load; the power of the relatively small group of CLAs.

2e. Review processes

Written reports by the review editors should be made public. Review editors should take care of instances in which reviewers and authors (like Pielke sr., John Christy Madhav Khandekar and others), have been treated in a disputable way.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Synthesis report – strong point: the emergence of a text supported by all member states; the prize: a lot of jargon and constructed language, especially in the SPMs. Weak for AR4: several LA's and members of the core writing team appear to be “stealth issue advocates”.

2g. Adoption of report by the IPCC plenary

The IPCC plenary is too political. The resulting texts may be acceptable to all, but the price is a lack of clarity.

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

Wg1 did a pretty good job. Wg2 has an alarmistic bias. Wg3 leans too heavily on the economic sciences and less on other branches of the social sciences. Of course, there are some instances where authors or reviewers may have been treated incorrectly (e.g. Pielke sr., John Christy or Madhav Khandekar). Ideally this should be noted by the review editor.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

IPCC really is a learning process. A dialogue between scientists and policy makers.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

In my opinion part of the criticism of the IPCC assessment process is in reality criticism of the state of the art in present day scientific research in general, and climate change research in particular. Although standards are high, they may not be high enough and should be raised. This would require a thorough analysis of weaknesses and causes and a collective willingness to further raise these standards. There are obvious funding implications.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Wg1 did a fair job, but failed to communicate the meaning of the subjective (“based on expert judgement”) nature of some of the probabilities. Wg1 did a very good job on listing issues that require further research. In other working groups this clearly had lower priority

The SYR has a very reasonable chapter 6: ‘Robust findings, key uncertainties’, but this was not adequately summarized in the SPM, nor was it adequately communicated to the outside world. I see this as one of the major challenge for IPCC and the media: to better communicate the nature of the scientific study of a complex and unique system.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Errors in IPCC reports should be rectified.

Quality control in general is not one of the primary tasks of IPCC. If the science is wrong than the science assessment will report these errors. Quality control is an important task for WCRP, IGBP etc.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

After AR4 several bureau members violated policy neutrality, and downplayed uncertainty. Others did not, but, in general, this was not picked up by the media. I suggest that bureau members should pay a fine every time they use the word “ought” or “must” or “should” in a statement on possible climate-related action. There should be special briefings on (un)certainty, and the different roles of science and policy in society.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None. I shall only answer the questions on literature and data

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

5. Given that IPCC assessments consider a vast amount of literature, what are your views and

suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

I think it's critical that all literature and data should be Open. I and colleagues in the Open Knowledge Foundation and Science Commons have created the Panton Principles for Open Data (<http://www.pantonprinciples.org>). We strongly urge that the IPCC adopt these principles and insist that all data on which they make judgments should be fully Open.

I also urge that the IPCC put pressure on the community to publish only in Open Access journals, or to self-archive in institutional repositories.

I also urge the IPCC to persuade funders of climate research that they should require grantees to make the papers and data fully Open Resources: <http://www.pantonprinciples.org>

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

e and f - No presentation of alternate viewpoints e.g. why isn't the ninth to thirteenth century warming just occurring again?

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

See above. Also, the need for September 24, October 5 and October 21 versions of the Climate Change Science Compendium 2009 was ludicrous. The original Figure 1 -3 was blatantly disingenuous and had to be totally changed. The revision was still scientifically baseless. Revised Figure 1 - 3 surreptitiously stopped with 2005 data when data available through 2008 would show a different result.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The governments are all politically driven and should stay out of the review process.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The conclusions related to anthropogenic global warming are based on a hypothesis, but incorrectly presented as scientific fact.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat,

and/or funding structure to support an assessment of this scale?

II. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

I would like to see the scoping of policy questions reflect the best geological estimates of the quantity of fossil fuels available for extraction, rather than economic models which predict usage based on population and economic growth, as if geological availability was totally elastic.

I would also like to see the scoping of policy questions be invite to address a changed baseline for GWP calculations. By using 100 years as the baseline, the short-term impact of methane is diminished by a factor of 4, while the 100-year impact of the long-lived F gases is exaggerated. This flows into carbon trading, and affects the entire future planning for natural gas, where methane leakages average 1.5%.

Since it is in the immediate short term that we need to see a rapid turn-around, I would like to see policy papers address the GWP problem, given that GWP 100 is an artifact, chosen for convenience, as much as anything.

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

Positive

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Positive, and without their involvement, the whole process would linger in obscurity.

I would like to see objective tracking and publication of the extent to which government leaders receive climate science briefings, however. Here in Canada, we think it almost certain that Prime Minister Harper and his cabinet have never received a proper climate science briefing.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I think the IPCC should do as all good PR companies advise, which is to be fully honest and open as soon as an error is detected, and make no attempt to cover up.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Here in North America, we face a major problem with there being too few to no scientifically trained journalists. Could the IPCC make a special outreach effort to communicate to journalists who are the eyes and ears of the public? Maybe this already happens.

I also suggest that it would be good to invite people to follow the IPCC through Twitter, Facebook, and a "public-friendly" parallel website, designed for the general public, not the IPCC insiders, scientists and staff.

I also suggest that when the Fifth Assessment Report is released, it be done in several different formats, including short YouTube clips, a version for teenagers, and a version for climate deniers, addressing their mis-beliefs.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The IPCC assessment model may be flawed by the use of fossil-fuel availability data derived from economic, not geological models. Some of the SRES scenarios assume a major increase in the consumption of oil and gas, which is very unrealistic. I would like to see a major conference

at which climate scenario modellers were invited to meet up with oil, gas and coal reserves analysts.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

I have thought for ten years that use of the term "mitigation" does the public a major dis-service, when "solutions" is what it really boils down to. "Mitigation" is not a word that anyone uses over dinner, and yes without major public support, the climate science will remain locked away, accessible only to other scientists and committed NGO leaders. "Mitigation" means "to act in such a way as to cause an offense to seem less serious", and it locks in a mind-frame or mental map which is all about preserving the current reality of the world, and trying to "fix it", to make it carry on as normal - whereas in reality, we need to get people excited about this amazing transition to a world that can flourish without fossil fuels, and without destroying its forests.

If I may be so bold, the whole framework of the IPCC's thinking, and the public debate, has been one of "making the problem go away", rather than embracing the next great age of our civilization, transforming it in the same way that it was transformed from pre-industrial to industrial, in the 19th century. The best way to get everyone excited about this, in my experience, having given as many as 500 talks and lectures on climate change and energy solutions, is to address the change as the great transformation, that follows the tradition of the Renaissance, the Scientific Revolution, and the Industrial Revolution, in which human ingenuity and creativity blossomed in the face of poverty, autocracy, and dogmatism.

We have been playing the entire game in defence, and never in attack. We need Climate Solutions Treaties, in which nations agree to accelerate the uptake of the solutions, as well as mitigation treaties, in which they try to reduce the scale of the problem.

Many thanks for your attention, and the opportunity to share my ideas.

Addendum:

I have also written a 16-page paper on ideas to tackle climate change, which is available for free download on my website. Six of the ideas are technically outside the IPCC process, but I hope you find them helpful.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

I have had a long experience with the IPCC assessment process starting in about 1992.

As I have written on in papers and on weblog posts, which I will list some of below, the IPCC involves a top down management of the chapters. The 2007 Statement for Policymakers is a narrowly focused summary which was used to promote the perspective of climate variability and change of the organizers and leadership of the IPCC assessments.

Below I have listed some of my experiences and documentation of the IPCC process.

For the 1992 Supplement to the 1990 IPCC Report, Climate Change 1992 – The Supplementary Report to The IPCC Scientific Assessment JT Houghton, BA Callander and SK Varney (Eds) Cambridge University Press, UK. pp 205, I was asked to review several Chapters of the draft. I made a number of suggestions, including the need to introduce the role of land use/land cover change as an important regional and global climate forcing. My input was totally ignored without any response.

In the 1995 IPCC Report; see IPCC 1995 Climate Change. WMO/UNEP Intergovernmental Panel on Climate Change, Second Assessment Report. Cambridge University Press, Cambridge, I was invited to be a contributing coauthor on the chapter on regional climate. Again, I prepared detailed input for the Report, and again all of my comments were ignored without even a rebuttal. At that point, I concluded that the IPCC Reports were actually intended to be advocacy documents designed to produce particular policy actions, but not as a true and honest assessment of the understanding of the climate system.

As a result of this second refusal to include peer reviewed scientific information, I called the IPCC and resigned from any further involvement in this clearly biased assessment process. I was not invited to contribute to the more recent IPCC reports.

Shortly thereafter (in ~1995), I was asked to serve on an International- Geosphere-Biosphere Programme Committee (BAHC). I told them that my views were being ignored by the IPCC, however, I was informed that this was the reason that I was invited. The subsequent process and the ultimate completion of a book entitled “Kabat, P., Claussen, M., Dirmeyer, P.A., J.H.C. Gash, L. Bravo de Guenni, M. Meybeck, R.A. Pielke Sr., C.J. Vorosmarty, R.W.A. Hutjes, and S. Lutkemeier, Editors, 2004: Vegetation, water, humans and the climate: A new perspective on an interactive system. Springer, Berlin, Global Change - The IGBP Series, 566 pp. http://www.springer.com/cda/content/document/cda_downloaddocument/9783540424000-t1.pdf?SGWID=0-0-45-111848-p7108531, demonstrated that balanced climate assessments can be developed. This “new perspective” was not properly presented in the 2007 IPCC report.

I was subsequently invited to write an article for the IGBP Newsletter in 2004 which summarized this broader view; Pielke, R.A. Sr., 2004: Discussion Forum: A broader perspective on climate change is needed. IGBP Newsletter, 59, 16-19. <http://pielkeclimatesci.files.wordpress.com/2009/09/nr-139.pdf>

The recognition of the need for a more inclusive, comprehensive assessment of climate continued with a 2005 National Research Council report National Research Council, 2005: Radiative forcing of climate change: Expanding the concept and addressing uncertainties. Committee on Radiative Forcing Effects on Climate Change, Climate Research Committee,

Board on Atmospheric Sciences and Climate, Division on Earth and Life Studies, The National Academies Press, Washington, D.C., 208 pp. <http://www.nap.edu/openbook/0309095069/html/>, which I participated on. We concluded that

"Despite all these advantages, the traditional global mean TOA radiative forcing concept has some important limitations, which have come increasingly to light over the past decade. The concept is inadequate for some forcing agents, such as absorbing aerosols and land-use changes, that may have regional climate impacts much greater than would be predicted from TOA radiative forcing. Also, it diagnoses only one measure of climate change—global mean surface temperature response—while offering little information on regional climate change or precipitation. These limitations can be addressed by expanding the radiative forcing concept and through the introduction of additional forcing metrics. In particular, the concept needs to be extended to account for (1) the vertical structure of radiative forcing, (2) regional variability in radiative forcing, and (3) nonradiative forcing. A new metric to account for the vertical structure of radiative forcing is recommended below. Understanding of regional and nonradiative forcings is too premature to recommend specific metrics at this time. Instead, the committee identifies specific research needs to improve quantification and understanding of these forcings."

Despite the wide diversity of views on the Committee which wrote this report, all viewpoints were accommodated and the findings and recommendations from the Report represent what can be accomplished when reports are prepared as inclusive assessment documents rather than advocacy statements. The 2005 NRC report conclusions were essentially ignored in the 2007 IPCC assessment.

I also wrote several articles on the limitations of the IPCC assessment process; i.e. Pielke Sr., R.A., 2002: Overlooked issues in the U.S. National Climate and IPCC assessments. *Climatic Change*, 52, 1-11. <http://pielkeclimatesci.wordpress.com/files/2009/10/r-225.pdf>; Pielke Sr., R., K. Beven, G. Brasseur, J. Calvert, M. Chahine, R. Dickerson, D. Entekhabi, E. Foufoula-Georgiou, H. Gupta, V. Gupta, W. Krajewski, E. Philip Krider, W. K.M. Lau, J. McDonnell, W. Rossow, J. Schaake, J. Smith, S. Sorooshian, and E. Wood, 2009: Climate change: The need to consider human forcings besides greenhouse gases. *Eos*, Vol. 90, No. 45, 10 November 2009, 413. Copyright (2009) American Geophysical Union. <http://pielkeclimatesci.files.wordpress.com/2009/12/r-354.pdf>. In this later multi-authored paper in which each author is an AGU Fellow we wrote with respect to the 2007 IPCC assessment that

“The evidence predominantly suggests that humans are significantly altering the global environment, and thus climate, in a variety of diverse ways beyond the effects of human emissions of greenhouse gases, including CO₂. Unfortunately, the 2007 Intergovernmental Panel on Climate Change (IPCC) assessment did not sufficiently acknowledge the importance of these other human climate forcings in altering regional and global climate and their effects on predictability at the regional scale. It also placed too much emphasis on average global forcing from a limited set of human climate forcings. Further, it devised a mitigation strategy based on global model predictions. Although aerosols were considered as a global average forcing, their local effects were neglected (e.g., biomass burning, dust from land use/land cover management and change, soot from inefficient combustion).”

The summary of my experience with the IPCC is that it is managed with particular outputs in place before the assessments are even started. The Lead Authors have almost complete control with respect to what is accepted in their Chapter, and what is ignored.

The IPCC is actually a relatively small group of individuals who are using the IPCC process to control what policymakers and the public learn about climate on multi-decadal time scales.

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

Without new scientists leading the IPCC process as LAs and CLAs who are not assessing their own research work, the next IPCC report is doomed to continue to be completed by an oligarchy that is using its privileged position to advocate for a particular perspective on the role of humans within the climate system which conforms with their published research.

The next IPCC report will not be a balanced assessment, but continue to be real conflict of interest with policy advocacy in the guise of a scientific framework.

3. What is your opinion on the way in which the full range of scientific views is handled?

The 2007 IPCC report failed to be inclusive in its assessment.

I documented biases in the WG1 2007 IPCC report in testimony to a subcommittee of the US House of Representatives; Pielke Sr., Roger A., 2008: A Broader View of the Role of Humans in the Climate System is Required In the Assessment of Costs and Benefits of Effective Climate Policy. Written Testimony for the Subcommittee on Energy and Air Quality of the Committee on Energy and Commerce Hearing “Climate Change: Costs of Inaction” – Honorable Rick Boucher, Chairman. June 26, 2008, Washington, DC., 52 pp.

<http://pielkeclimatesci.files.wordpress.com/2010/01/testimony-written.pdf>

In the testimony I included an appendix which shows the cherrypicking in the chapters in the 2007 IPCC WG1 report by documenting what peer reviewed papers were ignored. For example, in order to evaluate the IPCC’s claim to be comprehensive, we cross-compared IPCC WG1 references on near-surface air temperature trends with peer-reviewed citations. We selected only papers that appeared before about May 2006 so they were readily available to the IPCC Lead authors. What we found were that peer reviewed papers that conflicted with the robustness of the

surface air temperature trends were ignored in the 2007 IPCC WG1 assessment. The IPCC WG1 Report clearly cherry-picked information on the robustness of the land near-surface air temperature to bolster their advocacy of a particular perspective on the role of humans within the climate system. As a result, policymakers and the public have been given a false (or at best an incomplete) assessment of the multi-decadal global average near-surface air temperature trends.

I have an example of an even more egregious exclusion of scientific viewpoints [with respect to the CCSP 1.1 report which was used in the 2007 IPCC assessment] which I documented in detail in .Pielke Sr., Roger A., 2005: Public Comment on CCSP Report "Temperature Trends in the Lower Atmosphere: Steps for Understanding and Reconciling Differences". 88 pp including appendices.<http://pielkeclimatesci.files.wordpress.com/2009/09/nr-143.pdf>

and E-mail Documentation Of The Successful Attempt By Thomas Karl Director Of the U.S. National Climate Data Center To Suppress Biases and Uncertainties In the Assessment Surface Temperature Trends.[<http://pielkeclimatesci.wordpress.com/2009/11/26/e-mail-documentation-of-the-successful-attempt-by-thomas-karl-director-of-the-u-s-national-climate-data-center-to-suppress-biases-and-uncertainties-in-the-assessment-surface-temperature-trends/>]

As I report in my Public Comment "The process for completing the CCSP Report excluded valid scientific perspectives under the charge of the Committee. The Editor of the Report systematically excluded a range of views on the issue of understanding and reconciling lower atmospheric temperature trends. The Executive Summary of the CCSP Report ignores critical scientific issues and makes unbalanced conclusions concerning our current understanding of temperature trends."

and "The process that produced the report was highly political, with the Editor taking the lead in suppressing my perspectives, most egregiously demonstrated by the last-minute substitution of a new Chapter 6 for the one I had carefully led preparation of and on which I was close to reaching a final consensus. Anyone interested in the production of comprehensive assessments of climate science should be troubled by the process which I document below in great detail that led to the replacement of the Chapter that I was serving as Convening Lead Author."

The 2007 IPCC WG1 assessment failed to include the full range of peer reviewed papers on climate science.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments are necessarily political which is one of the reasons the climate issue has become so polarized and assessment committees have been chosen to perpetuate a particular perspective.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

See #3 and #9

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

See #3 and #9

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

See #3 and #9

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

See #3 and #9

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Future assessment Committees need to appoint members with a diversity of views and who do not have a significant conflict of interest with respect to their own work. Such Committees should be chaired by individuals committed to the presentation of a diversity of perspectives and unwilling to engage in tactics to enforce a narrow perspective. Any such committee should be charged with summarizing all relevant literature, even if inconvenient, or which presents a view not held by certain members of the Committee.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

See #3 and #9

11. Any other comments

Thank you for the opportunity to respond. I launched my weblog <http://pielkeclimatesci.wordpress.com/> in July 2005 in response to the serious limitations in the climate science community as a result of the IPCC and CCSP assessments.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Contributing author, Reviewer

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

The overall scope of the reports is appropriate. However, the policy questions should be much more skewed towards questions that policy makers are actually asking. For instance, one of the main figures in the WG1 SPM is the 'forcings' chart (cf. fig 2.20 in WG1). While this is very interesting to scientists in giving the relative size and uncertainties in the forcing due to changes in atmospheric composition, it does not illuminate the role of actual emissions (which policy makers can have influence over) (fig 2.21 is much more useful to them). Nor does it help address real policy questions that affect sectors that have complex emissions profiles (including short and long-lived species), nor does it help policy makers balance potentially conflicting goals with air pollution, public health or urban policies.

IPCC should fill out its mandate to be 'policy relevant' by having real questions from policy makers drive the form and content of the SPM (rather than just listing the highlights from the main report). What is the net impact of various sectors in various countries? What are the most productive sectors to tackle and what are the policies that can improve outcomes across a suite of policy objectives? What are the issues involved in including short-lived precursor species in climate policies?

In AR5 and subsequently, there should be a determination not to redo the issue from scratch every time. Focus should be on what new issues have come up or been addressed since the last report. We do not need another 'introduction to paleoclimate', or definitions of GWP etc.

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

Review processes (multiple rounds, open review, responses made public etc.) are suitable. But although the job was done thoroughly for the most part, a few of the 'issues' that have arisen come from excessively dismissive or insufficiently detailed comments on why certain comments were rejected. This is of course a thankless task, but in situations that are almost certainly likely to be brought up, it should be incumbent on the LAs/CLAs/Review editors to make sure that 'controversial' issues are dealt with clearly. The point is not that the persistent critics will be happy, but that outsiders will be able to see that the ideas/issues were dealt with fairly. In this respect the response to comments on the EPA Endangerment finding is exemplary.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. *What is your opinion on the way in which the full range of scientific views is handled?*

It is generally handled well. It is absolutely the role of an assessment process to pass judgment on the worth (or not) of alternative views or on literature that may be methodologically flawed. Most of the criticisms along these lines have been related to flawed papers that were (correctly) downweighted in the assessments. IPCC reports should not simply be a listing of all papers on a subject - that helps no one. However, such cases must be dealt with carefully to ensure that criticisms and reasoning is well supported.

4. *Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?*

Essential. If IPCC was a purely scientific body, then there would be no reason for countries to 'buy in' to the conclusions, and the possibility for misinterpreting the conclusions (or simply ignoring them) would be high. Secondly, without the direct input of policy makers in asking questions, the danger would be that IPCC would simply turn into a 'climate encyclopedia' - something useful for scientists, but not more widely.

5. *Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?*

6. *What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?*

It is important to enforce and maintain the consistency of approach as was aimed for in AR4. Changing the language on confidence in the expert opinions in the main reports and technical summaries would be extremely counterproductive at this point. More effort could be made to explain the conventions and provide 'real world' examples to illuminate the use of the terms (likely/very likely/etc.) for lay readers.

7. *What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?*

It is clear that the work of the IPCC does not end at the delivery of the reports and their adoption by the plenary. Some mechanism needs to be put in place to provide continuity post-plenary so that errors can be corrected if need be. This should not be a forum where already-decided issues can be endlessly relitigated, nor where minor word-smithing should be prolonged, but rather somewhere where referencing can be checked, potential errors investigated, and errata issued (if necessary). The CLA's need to be on hand throughout this process (along with the notes and records of how certain passages came to be - including the role of the review editors).

8. *What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?*

It is important that IPCC communicate on multiple levels: to the scientific community in the main reports, to the policy makers in the SPM, but also to the lay public. The 'FAQ' in the AR4 were very useful in this regard and keeping these up-to-date and relevant is very important. They should be more heavily pushed in my opinion.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Without the IPCC, national governments would be relying on either individual scientists or on their own National Academies (or equivalent). However, individual scientists have the potential for bias and may not have a full appreciation of the issues. The work of National Academies is important, but many countries - particularly in the developing world - do not have institutions of the caliber and independence of the US National Academy or the Royal Society in the UK. It is highly unlikely that the rest of the world will rely on developed countries assessments of what is happening and possible solutions. Thus the parameters of any assessment panel should be clear: it's needs to be international, it needs to have national 'buy-in' in all parts of the world, the science needs to be heavily peer reviewed (to prevent individual biases having a disproportionate influence), and it needs to be credible.

Thus if the IPCC did not exist, it would have to be invented.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

In all things the IPCC framework must retain its flexibility. Over-prescriptions of what can and can't be cited, who can and can't be talked to, etc. will retard the authors' ability to get to the best science and assessment. The IPCC rules are there to help the organisation function effectively - they are not there to provide people who do not agree with the conclusions hammers with which to undermine the reports. This should be stated unambiguously up front and clearly.

With respect to data and accessibility, it should become standard practice to archive as supplemental material the data used in graphs and the steps used to display them (smoothing techniques, any scaling, definition of the error bar etc.). Additionally, for the model assessments, 'recipes' for the figures should be made available so that late additions to the CMIP archive can be included in figures even if they weren't available for the initial publication.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC

assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

a,b) Any agency claimed to assess science in any way should not have any links to any politic movement, party, organization or dependency.

2c. Selection of lead authors

Any Lead Author should not be allowed to have any paper or document contributing in any way to the final report as there might be a conflict of interest. (Presumably there is).

2d. Writing of working group reports

No comment.

2e. Review processes

Astonishing weak as authors are allowed to not accept a comment. This is further used as a major response (~75%), which is totally unacceptable. In the review process in other scientific areas a comment have to be considered and answered accordingly before any publication. The process also identifies commentators, this is also against how science is supposed to work, however the person responding is allowed to be anonymous. This is set up to be used in a scary way. Should not be allowed, id's have to be hidden always to ensure objectivity, the IPCC should have no reason to know who said what.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

This is the worst part as the writer(s) don't even make objective conclusions based on the scientific content in the report ! Not to mention grey literture used and not using science contradicting the authors subjective conclusion. Now it's more like a political view not reflecting the actual science, which by default will lead to disaster. This part also seem to have no understanding of uncertainty and nuance.

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

g,h) No comment.

3. What is your opinion on the way in which the full range of scientific views is handled?

As mentioned above, the report does not consider or reflect anything near the full range of science. See e,f.

4. Given the intergovernmental nature of IPCC, what are your views on the role of

governments in the entire process?

See 2 a,b. Governments are running agendas for a political purpose. This should and must be separated from any influence of science or the scientific process and method to assure a scientific result and objective conclusion. Any other way will be disastrous for the citizens and have to be avoided by all means.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The literature used was about 25% grey, that is not from the peer-review process and from this less than 1 / 1000 was not indicated in the report as such. This shows the recent process is not working. Further there was use of documents not even published at the deadline, which is also totally unacceptable. If the final report requires some sort of validity and status, the rules have to be obeyed all the time for all papers.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

It is quite apparent the current handling of statistics and uncertainty (in both the WG reports and the Synthesis Report) is woefully inadequate (if not deliberately misleading)

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Hard to find evidence of any quality control or data assurance. As comments are dismissed without constructive discussion, how could it be? Some obvious failures like melting glaciers in the Himalayas have been corrected, but how on earth did they make it to the report at all. It was not near to be called science.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

IPCC should be a facade for the science in the field, however that has not been the case. So far IPCC have been dishonest and propaganda. To survive in the public mind as a trustworthy organization, a complete overhaul has to be performed. Start with the chair, then work through the organization.

Any organization claiming to be working on behalf of the public also needs to be completely transparent. There is no need for anything else especially as the IPCC deals with science, the transparency should be 100% no less. This also implies, such things as emails or any document handled should be published.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Any model will never be better than how it is implemented. That is why the writers need to obey the rules. This is actually not the case at present and thus makes it impossible to judge the model. The only obvious suggestion is to force a better implementation of the rules, and make a future change possible.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

no

11. Any other comments

none

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

Based on some of the errors that have recently been reported by the media, a more thorough peer review process is warranted.

3. What is your opinion on the way in which the full range of scientific views is handled?

The conclusions are far too conservative as has been shown by recent findings. Though it may not be possible, politics must be removed from the process in order to make real behavioral changes and reduce GHG to avert catastrophic climate changes and associated impacts.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The governments of the United States of America, India, and China need to quit playing games and get on board to develop global policies and GHG reduction targets that will be meaningful. Without the full participation of these governments, there is little hope we will avert catastrophic and potentially irreversible impacts from climate change.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Such a comprehensive assessment has never been done before. As noted above, more careful peer review of the documents need to occur to avoid the type of backlash that has occurred since despite repeated rebuttals that such errors have no impacts on the conclusions.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

As noted above, the politics must be farther removed from the process to the extent that is possible. The scenarios that were thought to be remote possibilities are looking like those we will face. Stronger statements must be made on the probability of various scenarios occurring,

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

IPCC has responded promptly and professionally to accusations of conspiracy and properly refuted these by focusing on the truth. The errors do not change the conclusions!

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Scientists have always been challenged by our abilities to take complex analyses and make them understandable to the general public. IPCC must continue to strive to make it absolutely clear the follies of inactions so that the general public will comprehend and demand change from government leaders.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The biggest challenge perhaps is developing solutions and promoting their implementation. As our window of opportunity to effect changes is rapidly closing, IPCC needs to somehow do a better job of promoting implemental solutions to make meaningful reductions in GHG emissions. Methods for sharing/transferring technologies with and to the developing world appears to be the biggest impediment.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

I do not have any suggestions for improving IPCC management.

II. Any other comments

While it is important to validate that potential impacts predicted by various scenarios (models) is occurring, the most important thing is developing mechanisms for reducing emissions. IPCC needs to improve methods for turning proposed solutions into actions! We are rapidly running out of time.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

IPCC Bureau member, co-anchor for a cross-cutting issue

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

The concerns of governments are properly taken into account when defining the reports outlines

2b. Election of Bureau, including Working Group chairs

Fortunately, the governments have been wise enough to select very skilled scientists as Working Groups chairs. Some Bureau members are not very efficient in the preparation of the reports, most of them turn out to be very helpful

2c. Selection of lead authors

The selection of LAs must take into account their ability to have a fair overview of the topic but also also must achieve an adequate geographical balance. The selection is in fact made by the WG Bureau members and although their number is limited, it would be inefficient to involve a large number of people in this selection

2d. Writing of working group reports

The quality of the writing obviously varies from one chapter to another and checking the quality is a major task of WG Chairs

2e. Review processes

I hardly see any way of improving the present processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Better synergy with the WG reports could probably be achieved, but improving the present approach is probably not an easy task, taking into account the tasks to be achieved by the involved actors.

2g. Adoption of report by the IPCC plenary

Two key issues are to be kept unchanged :

- the plenary of each WG, accepting the reports, are chaired by scientists, the WG chairs.
- any proposed change in the text is rejected without any further discussions if the LAs seating near the chair expresse the view that such a change would be in contradiction with the available scientific results.

2h. Preparation of any special reports

Special reports are subject to the same procedures as the main reports

3. What is your opinion on the way in which the full range of scientific views is handled?

Fair enough

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The IPCC raison d'être is to provide the decision makers with a statement of the scientific knowledge which they can understand and trust. The role of the government is what it should be. They select the scientists as WG Chairs on the basis of their academic records exclusively. The Bureau members are selected not only from their records, but also from geographical balance considerations which sometimes lead to inadequate choices. When the SPM are formally approved, they make sure that the statements cannot be misunderstood, are clear for non-specialists and are consistent with the detailed content of the chapters. The supervision of the whole process from beginning to the final product makes the governments confident in the report content

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Non peer reviewed literature must be taken into account, in particular where local impacts are evaluated. A possible improvement could be asking two specialists to review each paper cited in the IPCC report, when it has not been formally submitted to referees before publication.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I suggest that the nature and origin of each uncertainty is described as precisely as possible, at the expense of an uniform scale used in the past, aiming at using the same words to describe all uncertainties

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The very few errors detected have been adequately acknowledged and corrected.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

IPCC per se should not communicate with the media and general public, except in making the formally approved reports available in all languages. The IPCC officials should refrain from any statement which is not taken from an approved report. The participation of the IPCC officials in the COPs should be limited to the strict minimum. Many criticisms addressed to IPCC refer to statements attributed to it, while they cannot be found in any report. A golden rule of IPCC, actually strictly followed, is "Be policy relevant, never policy prescriptive". Nevertheless, many people refer to IPCC recommendations which have never existed, e.g. the 2° limit. A strict border line between scientific evaluation under IPCC responsibility and policy decisions is necessary to IPCC credibility.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

IPCC should be taken as a model to be followed in other sustainable development issues

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

I have no comment on a. or b.

2c. Selection of lead authors

I believe that it is unfortunate that the selection of "Lead Authors" frequently includes those whose "contributions" are often featured/cited in the Assessment Reports, thereby contributing to the perception of lack of impartiality, if not outright conflict of interest.

2d. Writing of working group reports

From what I've seen, the writing is quite unprofessional. As one Lead Author (Andrew Weaver) has recently commented, during an interview (CBC radio program "The Current", Feb. 10, 2010) "scientists put together [their contributions to the Assessment Reports] 'off the side of their desks'."

2e. Review processes

In my view, the so-called "Review Process" - which the above noted Weaver has called "incredibly intense" - is probably the weakest link in the entire IPCC process. The IPCC Chair, Rajendra Pachauri has frequently claimed that "The [IPCC] process is so robust – almost to a fault" and much ado has been made of this "review process" - often described as "peer review".

Yet the record clearly indicates (for example in the "chapter team's" responses to Reviewer Comments on the Second Order Draft of AR4) that fewer than 24% of the 34,000 Reviewer Comments could be categorized as "Accepted".

It is also somewhat jarring that (with the exception of Government Representatives) the Reviewer Comment author is always identified; yet the one who Accepts/Rejects or otherwise qualifies in response is never identified. Surely such a process is contrary to the "peer review" process as practiced by academic journals (notwithstanding the now known deficiencies of academic peer review - i.e. validation/verification of data and methodology - as far as climate science is concerned)

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

it is quite obvious that the preparation of the Synthesis report and SPM is totally inadequate, in that it appears designed to be policy prescriptive and lacking in nuance - and more importantly makes little or no mention of any uncertainties - or contradictory studies/opinions

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

I have no comment on g. or h. - other than that considering my comments above, both should be rigorously reviewed by those external to the IPCC who have some familiarity with this part of the process.

3. What is your opinion on the way in which the full range of scientific views is handled?

There is no indication (at least in AR4) that any consideration has been given to the "full range" of scientific views. This is confirmed by the fact that, for all intents and purposes, 76% of the Reviewer Comments to the Second Order Draft could not be readily categorized as "Accepted"

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Government agendas should not be permitted to "pollute" a process such as that which the IPCC is purportedly mandated to pursue.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

I'm afraid that your "given" is a presumption that is not borne out by the facts. The IPCC currently has in place a process for dealing with non-peer-reviewed literature, in that it is to be clearly noted as such in the References to each Chapter. Yet, of the 5,600 non-peer-reviewed references cited in AR4's 44 Chapters, only six were identifiably designated as such.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I would have to give some thought as to suggestions for change, but it is quite apparent the current handling of uncertainty (in both the WG reports and the Synthesis Report) is woefully inadequate (if not deliberately misleading)

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The IPCC has been a complete (and embarrassing) failure on all counts.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I'm sorry but the only words that come to mind when thinking of IPCC communications with the media and the general public is "dishonest, self-serving propaganda". Furthermore, when considering the pronouncements of the IPCC Chair, this impression is magnified by his lack of consistency. For an example of the latter, pls see:
<http://hro001.wordpress.com/2010/05/20/pachauri-defends-shoddy-shades-of-gray/>

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

This question requires considerable rewriting, as it currently lacks clarity. What is meant by the "sustainability of the IPCC assessment model"?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Yes, I'm sure I could make some. But until I see your responses to my replies to 1-9, I'm not sure that it is worth the time I would need to devote to making such suggestions.

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

The IPCC procedure is seriously flawed in most respects - the summary by another respondent is right to the point:

- Over-reliance on in-group peer review procedures which do not serve as a guarantee of quality and do not ensure due disclosure;
- Serious and continuing failures of archiving and disclosure in relation to peer-reviewed studies which the IPCC and member governments have drawn on;
- Continuing resistance to disclosure of basic information which reputable journals increasingly insist on as a precondition for acceptance of papers;
- Basic errors in the handling of data, through failure to consult or involve trained statisticians;
- Failure to take due account of relevant published work which documented the above lapses, while disregarding IPCC criteria for inclusion in the assessment process;
- Failure to take due note of comments from dissenting critics who took part in the preparation of the Panel's Fourth Assessment Report (AR4);
- Resisting the disclosure of professional exchanges within the AR4 drafting process, despite the instruction of member governments that IPCC proceedings should be 'open and transparent'; and last but not far from least
- Failure on the part of the IPCC and its directing circle to acknowledge the above deficiencies, still less to remedy them.

3. What is your opinion on the way in which the full range of scientific views is handled?

IPCC has always had a pre-conceived agenda to prove AGW (later to become "climate change"). This is not the way science works.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

This is not supposed to be a political question at all

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

IPCC selectively chooses literature that can support dominating AGW/human-induced-climate-change views

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

See #2

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

See #2

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Highly arrogant and non-scientific - especially relating to the present Chairman.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Drop the bias regarding lead authors and other. Let in and listen to other scientists

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

Thanks you - please do not make this yet another distorted evaluation or judgement. The science community must seriously deal with the flawed processes of IPCC that threaten to ridicule the whole science community.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

Require a wider selection of reviewers (including 'skeptical' climate scientists) and total process transparency.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

I am very uncomfortable about the 'science is settled' position taken by some, the lack of attention paid to latest scientific papers, and the failure to acknowledge well-argued 'skeptical' cases.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I am not happy that some Governments seem, without due questioning, to have adopted fixed positions on climate change cause, effect, and required political response.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Use ONLY peer-reviewed literature, but ONLY after the peer review process has been overhauled to the satisfaction of serious scientists.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Be completely open and honest about not only uncertainties but also about known unknowns, suspected unknowns, and the probability of existence of unknown unknowns - and state clearly what projects and planned projects have so far been tabled to fill these gaps. Only quantify what can sensibly be quantified, and get all statistics double-checked by a committee of unbiased statisticians.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

As above. No stats should be published until they have been assessed and if necessary corrected by a group of unbiased statisticians. When problems are found after publication, be open and honest and broadcast the fact, the corrections, and the effects of same.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I feel the IPCC should back off right off advocacy and stick to good science. Give the politicians and the public just the facts and steer clear of opinion and editorial.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

It's not sustainable all the while it can be seen to be pushing a one-sided view. There is a lot of good science going on that's trying hard to answer as yet unanswered questions, and that has provided fresh information that as yet cannot be fitted neatly into our overall understanding of Earth's climate system. IPCC assessment should cover all these findings and the unfolding picture of the climate system, not just rehashes of the old 'settled science'.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Just leave an invitation clearly open to all climate scientists worldwide to submit papers for assessment by a reworked and demonstrably fair and robust peer review process, and include ALL of it in the IPCC Reports. Get the Universities to execute and fu

11. Any other comments

1. IPCC must regain trust and provide fair and unbiased information to politicians worldwide. Just give information, not advice. If they want advice, they can and should establish a separate

body to take IPCC reports and use them as a basis for said advice. Keep science and advocacy/politics as separate as possible.

2. So-called 'Climategate' has undermined confidence in basic measurements of global atmospheric temperature. We now need a formal external quality assurance process placed above (e.g.) Hadley, CRU, GISS, UAH, etc to make sure we are using reliable data - and head off any risk of future accusations of error, bias, cheating, etc. We dare not in future be seen to be using AGW advocates to supply critical stats.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

Too much political.

3. What is your opinion on the way in which the full range of scientific views is handled?

Again, too much political.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

To listen first for sound science, and to make decisions based on this sound science.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

IPCC should not rely on political reviews (no Greenpeace document, no WWF document, etc.)

6. What are your views and suggestions regarding the characterization and handling of

uncertainty in each of the working group reports and the synthesis report?

The synthesis report should not say that "we are pretty sure" when the working group report just told us that it is not that confident.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Poorly handled. It is a shame.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

IPCC should just talk about science.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Yes. IPCC should be dissolved now. It really has to be replaced by real* scientifics !

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

1. Take it out of the UN.
2. Take real scientists and do not pay them for this.
3. Make sure they will welcome dissident voices.

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead author, Contributor, Reviewer

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

I don't quite understand what you mean by 'policy questions'

2b. Election of Bureau, including Working Group chairs

It is important that these people - also the IPCC chair - are scientists with a high standing in the

scientific community

2c. Selection of lead authors

The process is bound to be somewhat undemocratic. But a larger openness is desired

2d. Writing of working group reports

OK

2e. Review processes

In addition to the current review process a group of knowledgeable scientists should be asked to review the various parts of the reports. This is to make sure that no parts remain unreviewed. It is important that the authors and review editors give explicit reasons for not accepting some review comments

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Uncertainties in the assessments should be more clearly stated in the Synthesis and SPMs

2g. Adoption of report by the IPCC plenary

A broader group of scientists - representing a range of views - should be present at these meetings

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

Laudable attempts are obviously made to include a range of scientific views. But the fact that those who are willing to devote a lot of their time to preparation of the reports are normally 'mainstream' scientists may make it more difficult for 'dissidents' to have an impact on the content.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

By and large, IPCC has been able to retain its scientific integrity despite its intergovernmental status. The roles of the IPCC chair and the chairs of the WG are extremely critical in this regard.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Non-peer-reviewed literature should be avoided whenever possible. But there many cases where such literature has to be taken into account. It is important that whenever this is done reviewers should be asked to consider such situations extra carefully

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

As I said above, i think that the SPMs and the Synthesis reports in some cases have neglected to present the full ranges of uncertainties and the consequences of these uncertainties. see e.g. Schwartz et al. 2007 'Quantifying climate change - Too rosy a picture?', Nature reports climate change, Vol 2, July 2007 and Schwartz et al. 2010 'Why hasn't earthwarmed as much as expected?' J. Climate 2453-2464.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

IPCC handled the 'Himalaya error' in a poor way, at least initially. The IPCC leadership should have been much faster to admit the errors and correct them.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

IPCC needs a stronger secretariat to handle communication issues

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

IPCC should continue in much the same way. With improvements as implmed by the above

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

See above

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Contributing Author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

- 2a. Scoping and identification of policy questions*
- 2b. Election of Bureau, including Working Group chairs*
- 2c. Selection of lead authors*
- 2d. Writing of working group reports*
- 2e. Review processes*
- 2f. Preparation of the Synthesis report, including the Summary for Policy Makers*
- 2g. Adoption of report by the IPCC plenary*
- 2h. Preparation of any special reports*

My main comment is for item 6 below.

3. What is your opinion on the way in which the full range of scientific views is handled?

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

It is essential that governments continue to play a role, because they must have "ownership" of the assessments. If it were made independent of governments, or replaced by an independent equivalent, then it would be seen as an outside, undemocratic body telling governments "what should be done". It is only by feeling that they "own" the process (and its outcome) that they will treat the findings seriously.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I would recommend that the IPCC re-visits their guidance on the terminology used for communicating uncertainty within all of the working group reports and the synthesis report. In particular, my opinion is that the current terminology may lead to many of the reports' audience obtaining an over-confident impression of the level of certainty provided by the current level of scientific knowledge, particularly if they aren't familiar with either the IPCC's terminology or with assessing uncertainty risks and evidence.

For example, the current terminology (Box 1.1 of WGI AR4) indicates the likelihood or an outcome or result as extremely likely (>95%), very likely (>90%), likely (>66%), more likely than not (>50%), about as likely as not (33 to 66%), unlikely (50% probability is not "more likely than not"). I know that this is factually correct, but given that there is some subjectivity in all these assessed statements, an estimated probability of 51% is not really significantly different to 50%. I would be more comfortable with classing anything between 33 and 66% as "about as likely as not". And 66% up to the next class boundary as "more likely than not", and so on.

There has been considerable controversy surrounding the palaeoclimate chapter of the WGI AR4, especially the section on the climate of the last 2000 years. The conclusion was actually

relatively weak, i.e. that the assessment of the evidence led the author team to consider that there was at least 66% confidence that the very recent period was warmer than previous periods during the last 1300 years. Given the >66% assessment, this was termed "likely". Many people misinterpret this and think that a much more confident statement was being made, and thus criticise this because the uncertainties involved in estimating past climate are known to be large - so how can we be so sure that it is warmer now?

But, of course, the author team are not "so sure" at all. Just at least 66% confident. Had this been expressed as "it is more likely than not that the present period is warmer than previous periods in the last 1300 years", then the uncertainty becomes so much more obvious.

This may seem like a rather narrow issue compared with the breadth of your review as a whole, but it does go to the heart of the key matter: communicating scientific understanding and scientific uncertainty. The audience of the AR4 should not leave with the impression that we are sure that it is warmer now than in the medieval period. The point is that there is evidence to indicate that this may be the case, but it is too limited to be very sure. A similar point could be made about the TAR which also made a "likely" statement about this issue.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

I wished to comment on one particular aspect of the IPCC process, related to the terminology of uncertainty used by the IPCC. Although this is indeed a rather specific single issue, I believe that most of what the IPCC assessment reports are considering is uncertainty. While it is a single issue, it is crucial to the work of the IPCC -- how to communicate scientific uncertainty.

I believe that similar views may be included in a submission by a colleague of mine, who was invited to provide his responses to this questionnaire. He showed me his draft response and asked if I had any other ideas to add, which I did so in terms of some similar, but briefer, comments to those I made above. I did not realise at the time that I could also comment directly via your website, but I am now taking advantage of this to expand on my views.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

The IPCC assessment process as outlined appears to be carefully neglecting key critics of the IPCC.

3. What is your opinion on the way in which the full range of scientific views is handled?

Not edifying at all. Why were Steven McIntyre and Ross McKittrick not invited to the McGill event?

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments, through massive funding allocations related more to domestic political imperatives, have significantly skewed the process.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

All data and algorithms must be made available. Given the badly broken nature of the climate science peer review system, non-peer-reviewed literature may be just as credible - if it is properly documented, supported, and archives the foundational data.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The lack of statistical diligence in the many IPCC reports has led to rampant mischaracterization of the uncertainty associated with the models.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The policy side of the IPCC operates from preconceived ideas of the outcomes. Once you have advertised that a "consensus" of scientists agrees with your position, it is rather difficult to undertake robust quality control. Climate scientists, in turn, are so reliant upon funding from the policy makers that they self censure and otherwise castrate normal scientific discourse.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

IPCC presents to the world a narrow view of climate science promulgated by select politicians and the more radical of the AGW scientists. No balance is evident and massive public distrust is the result. The IPCC must reinvent itself as a neutral arbitrator of all sides of the debate and cease underplaying the uncertainty inherent in their predictions and models.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The IPCC process has been co-opted by the anti-corporation, anti-human crowd to the extent that little of value remains. They will merely continue their pogrom against progress and their bastardization of science. The IPCC assessment model should be abandoned and the funding used to support broadly-based climate science.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Achieve a balance in IPCC governance by offsetting evangelical AGW advocates with appointment of their most prominent critics, real statisticians, and economists capable of creating credible cost-benefit analyses..

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Regarding the scoping and identification of policy questions can I suggest that the following policy is amended:

" 2 The role of the IPCC is to assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts and options for adaptation and mitigation. IPCC reports should be neutral with respect to policy, although they may need to deal objectively with scientific, technical and socio-economic factors relevant to the application of particular policies.

This assumes that there is an anthropogenic cause to climate change and appears to place the IPCC into a situation of cognitive dissonance if evidence to the contrary is produced. If the scientific risk was shown to be small then the IPCC would no longer need to exist which is a serious conflict of interest in a body who's output is relied upon by almost all major governments to set taxation policies for their citizens.

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

Seems to be very poor. Very few sceptical reviewers comments were acted upon and very few, if any, sceptical papers are sought and included in the report. This makes it very hard for an objective assessment of the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

In an ideal world science should be divorced from Government as far as possible as, if not, it will inevitably become politicized and potentially could be corrupted by the research bodies' addiction to funding from the state sponsors. The difficulty is how do we ensure separation of science from state? Science needs to be SEEN to be divorced from Government: If Government science funding, for university research, was distributed by a non-governmental body themselves paid for by the universities and/or industry, say from course fees or percent of profits from industry which utilised the output from university research, this may help keep the distance.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and

suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

A wider range of sceptical papers need to be considered. Currently they seem to be actively blocked both by the peer review process and the IPCC. The absence of differing theories and studies appears to not be consistent with the scientific method.

Not sure how it would be achieved but facts need to be checked before publication. The firestorm following the recent Amazongate, Glaciergate etc scandals is testament to the need.

Papers from advocacy groups, such as WWF, Greenpeace etc must absolutely not be allowed to feature in the report unless similar space is given to those with an opposing viewpoint.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Merely need to state the degree of uncertainty - very clearly

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Data quality assurance seemed to be poor in the 2007 report. An assessment of the potential errors in the paper should be given. If any errors are discovered then the IPCC must publicly acknowledge the errors and print addendums to the paper - this report is, after all, used to direct billions and even trillions of dollars from state governments so accuracy and openness is critical.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

My view is that for a man in such a powerful position Mr Pachauri is not good at handling difficult questions from the public and is undermining the respectability of the body of science in the report. I think he should stand down.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

A more open and even handed approach to both sides of the scientific debate is required. This would help the public's perception of the science and better inform policymakers. If the IPCC continues as if nothing had happened since the Climategate incident along with the various other 'Gates' incidents then the IPCC will be seen to have failed.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

As earlier, Mr Pachauri does not help the IPCC cause and should stand down.

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

Make it aware that we need to reduce our birth rate to save the earth.

3. What is your opinion on the way in which the full range of scientific views is handled?

I will pass -

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Do not be bassful (?) about saying it as it really is.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

This is my first involvement - ?

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Have yet to read any reports.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Have not read any reports.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

ditto

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

ditto

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

ditto

11. Any other comments

We must do something to reduce the population growth world wide. At the same time reduce the influence of religion in all matters. Religion does more to destroy than to build a better community.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

no comment

3. What is your opinion on the way in which the full range of scientific views is handled?

from what i have read and studied - the full range of scientific views is not represented at all.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

no comment

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

from my perspective as a snow scientist - all of the peer reviewed studies on western us snowpack have serious flaws in that none have utilized the available meta data from each site in order to quantify what changes in snowpack are due to site physical change, vegetative changes, sensor changes, etc and what might be due to climate change. all authors have assumed that any change seen is automatically due to climate and that there is no systematic bias in the data collection system. as a supervisor collecting these data - i can attest that is hardly the case and as early as the 1940's we had identified processes and procedures for handling systematic bias in snow data from vegetation changes. these authors have not done due diligence in data preparation and thus have marginalized their results.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

without inclusion of dissenting views, an appropriate characterization of uncertainty is not possible.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

poorly. defensively. retreat and propagandize. this is too important an issue to not thoroughly investigate all areas.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

poorly.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

no comment

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

no comment

II. Any other comments

no comment

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

What bothers me, is that the Summary for Policymakers is written with the intend to make politicians do something, instead of showing the results, doubts and uncertainties and let them decide for themselves if action is needed.

3. What is your opinion on the way in which the full range of scientific views is handled?

To me it's absolutely clear that you have to have a warming-bias to be heard by the inner circle of the IPCC.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

It's their easy way out of a seemingly difficult situation. They use it to hide behind, so they don't have to do the thinking themselves. And this has a self-strengthening effect on the IPCC. The more the politicians support the IPCC, the more the IPCC is claiming that they're right.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Get rid of the grey literature. Be scientific!

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

It's unbelievable that at one side the IPCC states that there is uncertainty on the feedback of clouds and watervapor and on the other hand rely heavily on climate models with high positive feedback. Uncertainty is not what the IPCC is known for, while in climate science there actually is a lot of uncertainty.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

This is exactly the reason that I am filling in this questionnaire. I would strongly suggest that the IPCC only accepts scientific papers that have and give access to the raw data. IPCC policy should be: "No raw data available? Sorry, then no place for you in the report."

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

They have been way too arrogant by saying to be scientific and knowing it all, while actually being advocating uncertain science with an agenda.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

It takes too long to produce one, it is too big to read. Get to the basic questions on what drives climate.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The IPCC should look at all climate factors, not just focusing on the influence of man on climate.

The IPCC should not organize meetings in order to get legislation implemented. Let that be done by the countries themself.

The IPCC should have a director of high standing in climate science.

The IPCC should stop being an advocate but start being a true scientific institute.

11. Any other comments

The most important thing is that the IPCC should focus on the science, on the availability of raw data, on the independent testing of models and on the use of real scientific literature.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

see below

3. What is your opinion on the way in which the full range of scientific views is handled?

physical sciences look pretty good

economics and mitigation is more tricky! What should really be pointed out more directly is the role key variables, e.g. the discount rate for economic gains and losses, influence the result, and how much these variables are, in the end, the product of certain assumptions and values. You can't prove that 5%, or 0%, is the correct value of the discount rate. It would be good if the IPCC included philosophical and critical information on these backgrounds, so that readers will find it easier to see how key assumptions influence results.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

As a science-policy interface, government involvement is critical in the IPCC process. What I would really like to see is much more transparency of government interventions. For example, how did US, Saudi Arabian and other interventions influence language regarding the likelihood of anthropogenic influence on the climate system in AR4? Whatever governments put into the process should be made public, especially written contributions, but also in the form of oral comments made in sessions, through session protocols/minutes.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Apart from actually reading the non peer-reviews publications before quoting them, and checking whether they're actually the best available source, I have no further suggestions.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

This needs to be improved, but I leave more concrete comments to others who have given this issue more thoughts.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Generally the IPCC does a very good job, but with some important exceptions. In my opinion, the glacier error could only blow up the way it did because the IPCC was much too reluctant and took way too much time to admit it. The IPCC itself should be eager to find mistakes and proactively correct for them. And if someone from outside finds a mistake, the IPCC should make sure it's being considered quickly.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The IPCC has been very slow in reacting towards the glacier error and other alleged errors. In the digital age, time is critical. For the future, the IPCC secretariat should be ready to respond much more timely.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I think the assessment model works generally fine. However, I think it should be opened up to public participation. This means that procedures, comments and discussions are made much more transparent than in the past.

Also the writing process itself should be more transparent. It was not helping discussing results in the AR4 when skeptic bloggers had to push the IPCC for publishing reviewers comments (at least that's how I remember it).

Finally, the IPCC should introduce the world's first public review system. We need to face it: Climate change is not the usual environmental issue. Much higher standards are required for such an extremely policy-relevant process than in other comparable fields. Climate change science needs to be cutting edge, and in my opinion this includes an open review process. It will require some significant resources, but I think it'll be worth it. If you'd like a comparison, look at the EPA GHG endangerment finding, which received 380,000 comments from the public within just 2 months. Of course, the EPA has a staff of 17,000, while the IPCC has about 14. Therefore, an open review process is hardly manageable within current structures. But I think it is vital to ensure quality of the AR5 (It's easy for a glacier error to be seen by just one pair of eyes and then missed by chapter authors, yet an entirely different thing can be missed by dozens or hundreds of interested civilians). It is important to make sure the AR5 is going to be accepted much more widely than previous assessments, to make public discussions about the science, impacts,

mitigation and adaptation much more focused, and at the same time help people educate themselves on climate change issues. Only if people can meaningfully contribute to the AR5, if they get agency in formulating the scientific foundation for climate politics (of course under strict supervision of experts!), it will be able to actually reach them and make a difference.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

I know this is the really tricky one, but I don't.

11. Any other comments

I would very much like to see the IAC Review being opened up to the public. According to the IAC Action Plan, the Peer Review is put in between the steps of Report Preparation and the Final Report. I would welcome it if this opportunity would be used in order to include meaningful public participation, for example through making the Peer Review a truly Open Review. The IAC would still hold its hands over the Final Report, yet it would give everyone an opportunity to be heard. Especially if the IAC Review is supposed to restore trust in the IPCC process (through vindicating it and/or improving it), it is in my opinion vital to include the interested public. This may require some efforts especially in terms of time and personnel. But given the reactions of skeptical websites towards e.g. the Oxburgh Review, open and transparent public participation appears to be the only way how the review process will be acknowledged by these people. And ain't that worth a try? (Compare also my suggestions under 9).

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Reviewer of a special report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

A tighter, more regular coupling between the UNFCCC negotiators attending the COP and SBSTA meetings and the scientists involved in preparing the IPCC reports would be welcome. It has been my experience that these groups are relatively separate. The Earth System Science Partnership (ESSP) and SBSTA are now collaborating on regular seminars and meetings between negotiators and active scientists. There should be more such opportunities for dialog between negotiators and scientists.

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

b,c) More effort should be made to inject "new blood" into the selection of authors and chairs. Continuity and corporate memory are important, but the IPCC must avoid stagnation. Climate science is proceeding very rapidly, and the IPCC structure needs to have a way to include and incorporate younger talent.

2d. Writing of working group reports

2e. Review processes

I think the review process is handled very well.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

Waiting four years for a new assessment report is too long. The full assessments should be complemented by an annual or at least biennial update. This would not have to go through the entire complicated drafting and approval procedure - it could perhaps even be prepared on behalf of the IPCC by one or more of the ICSU global environmental change programmes.

3. What is your opinion on the way in which the full range of scientific views is handled?

The "full range of views" - what we are able to show through valid scientific investigations - is treated very well in the assessment reports.

I have only two substantive criticisms about the 4th assessment report in this regard. The first is that I feel that the PRESENTATION of the report was too tightly choreographed. It seemed that anyone presenting the assessment report had to tightly adhere to the "official" IPCC script. I understand the reasons and pressures that led to this approach: keep the message simple and consistent. In hindsight, this approach backfired, since it appeared that real uncertainties and knowledge gaps were being intentionally downplayed or ignored.

The second is that I feel the assessment report should have discussed in more detail how the uncertainties in climate sensitivity in today's climate models impact of the range of predictions of future climate.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I have no suggestions for changes in the current scheme. The intergovernmental nature of the IPCC is very valuable.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the

literature used, including non-peer-reviewed literature?

I am adamantly opposed to including non-peer reviewed literature in the assessments. Doing so would be a colossal mistake. The peer-review process, while not perfect, is the most important and effective way we have to quality control the results of scientific investigations. Some critics complain that they are discriminated against in the peer review system, and that important results that go against the "orthodox" view are excluded.

I find these complaints deficient in two aspects. First, many scientists I know are seldom happier than when they are able to prove someone else's theory wrong. The "orthodox" view is under constant assault - from analysis published in peer-reviewed literature. Second, controversial claims require very solid proof in order to be seen as valid. As an Associate Editor of two journals, I am confronted on occasion with submissions that would not even make it through as essays or reports in the undergraduate courses I teach, much less as a publication in a respected scientific journal. Controversial papers ARE published in the peer-review system; they just have to be very good.

Opening up the IPCC assessments to non-peer-reviewed literature would demote them from being proper assessments of the state of our scientific knowledge of the climate system to simply being another opinion piece on a complex issue. Doing so would eliminate all the considerable scientific validity the assessments have.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I think that uncertainties are treated relatively well in the bodies of the main working group reports. The "Guidance notes for lead authors..." regarding addressing uncertainties are actually very good. I feel, however, that they were downplayed perhaps too much in the summaries for policy makers, certainly in the presentation of the assessment reports (please see my comment to question 3).

Additionally, while I think the way confidence levels are presented (e.g., very likely, highly certain) while nice from a communications point of view are certainly not statistically-based (at least not in the sense of a quantifiable confidence interval). If the IPCC wants to continue to use this wording, a more thorough (and scientific) description of the basis for these levels of confidence is warranted.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Quality assurance has worked very well. The media storm around the erroneous reference to the rate at which Himalayan glaciers are melting boiled down to a single erroneous reference among several thousand correct ones, and a single paragraph in a ca. 950 page report. While this error was regrettable, put into perspective it is vanishingly small - and the fact remains that glaciers in the Himalayas ARE melting - just not this quickly. Given the ferocity of the reaction to this single error, it would be prudent to add yet another step when each chapter is complete to have

an individual tasked with confirming that each and every reference comes from a peer-reviewed source. I feel that the IPCC response to the "glacieregate" commotion was entirely appropriate. They quickly went out with a press statement admitting the error and retracting the erroneous material.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The general public has nearly no understanding of how the IPCC works. The results are communicated widely, but much more effort needs to be made to explain how the IPCC carries out its assessments, and why it works the way it does. Clearly explaining the process through which the assessments are prepared would go a long way to defusing the current state of misunderstanding.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Not alternate, but rather complementary: I think that annual or biennial updates on the state of the science in between the formal assessment reports would be very valuable. These could be carried out by recognized international research organizations such as ICSU's Earth System Science Partnership (which includes WCRP, IGBP, IHDP and DIVERSITAS).

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

I think the secretariat functions very well. As I mentioned earlier, the choreography of presentation of the AR4 was perhaps too tightly controlled. This made it appear that the IPCC is steered by a small number of people at the top.

11. Any other comments

There is a tremendous amount of pressure today to "fix" the IPCC. Much (though not all) of this pressure comes from a concerted effort to discredit valid climate science. There are deficiencies in the IPCC that should be corrected: a bit too much of an "old boy" character in its membership, a fuzzy statistical basis for certainty levels, the appearance of a tight top-down control of the results presented. These deficiencies are important to address, but are relatively minor in proportion to the task IPCC has been assigned.

Science itself is under attack - not just the IPCC. We must address the real issues and deficiencies of the IPCC as an organization, but we must not allow science to become merely another opinion. Valid scientific endeavor survives and needs peer review - DON'T THROW THIS AWAY!

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

I only note that these procedures could be strengthened to avoid bias and mistakes that eventually reach the public.

3. What is your opinion on the way in which the full range of scientific views is handled?

The uniformity of scientifically based views has been overstated. Most members of the public don't know about the significant debate which exists among scientists on this issue.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Politics and science are fundamentally different in that science most seek and expose doubt while governments naturally seek conviction and consensus. Thus the mixing of government and science is problematic and must be handled with utmost care - more so than has been the case in the campaign to identify and counteract global warming.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions

for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

The main problem at the moment is in my view that the strong coupling between science and politics on the global warming issue has significantly corrupted both science and politics. To please politicians the IPCC has provided overstated consensus assessments of the cause of global warming, i.e. atmospheric carbon dioxide. So far as I can see the precise mechanism is not well understood and present public view promoted by politicians that reduction of carbon dioxide emission will solve the problem is more a political view than a verified scientific fact.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

The chairs and lead authors have been people who are committed to the AGW hypothesis, who were not able to give proper weight to opposing views.

There was no independent review by scientists, statisticians or lawyers outside the climate change world.

The synthesis report was just a political document and so was not suitable for giving scientific advice to politicians and other policy makers.

3. What is your opinion on the way in which the full range of scientific views is handled?

Very poor. There are several competing theories about why measured temperature has been rising - cosmic ray - cloud cover, UHI and CO2. The latter has the worst fit to data but was given

almost all of the argument. Most of the ancilliary arguments have subsequently been found to be wrong.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The whole process is muddled. What is needed is a clear analysis of the scientific knowledge and most importantly the uncertainties. That should be handed to governments, if necessary, for their evaluation and action, if necessary.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

There is some good peer review literature, particularly in blogs - some of the ones with the highest readerships have a high standard. But whose to judge? On the other hand the whole peer review system is corrupted and needs complete overhaul. So the situation at the moment is very difficult.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Very poor. THE idea of saying that there is a very high probability that humans cause global warming is laughable when there are vast gaps in knowledge between the physics of the CO₂ mol and the atmosphere.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The basic global temperature records need to be separated from the analytical role which needs to be separated from the political advocacy role. Compilers of global indexes should be scrupulously disinterested in policy questions.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The IPCC needs to be completely revamped before communicating with the media again.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Yes - the top tier of management - a top level management committee needs to be established consisting of scientists from a range of disciplines with open minds and keenly interested in establishing the facts and not pushing any particular philosophy or point of view.

10. Do you have any suggestions for improvements in the IPCC management, secretariat,

and/or funding structure to support an assessment of this scale?

Complete replacement of top management

11. Any other comments

I seriously question the value of having the IPCC at all. Its objective predetermines the direction of its endeavours. It is not well established as a scientific organisation. It is a promotion device for a particular world view dressed up as a scientific body. It is destructive to climate science.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

The response to reviewers comments has been clearly biased. Any comment attacking the political view has been ignored.

The IPCC report should present actual evidence that man is causing GW. At present it has none. Computer models are not evidence.

The report should contain an section of equal size devoted to the wealth of hard evidence that man is not causing GW. WattsUpWithThat.com for example contains hundreds of links to papers of this kind. It has 450 links to papers alone showing the MWP was warmer than currently.

3. What is your opinion on the way in which the full range of scientific views is handled?

The full range of views is not addressed. Only pro AGW views are considered. Henrik Svensmark for example has not even been mentioned and his work presents some of the best evidence that the sun controls our climate, not man.

4. Given the intergovernmental nature of IPCC, what are your views on the role of

governments in the entire process?

The IPCC results are politic, not science.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The authors should include an equal number of non pre AGW writers, as should the literature. Peer reviewed is not essential, however it should not include inputs from political groups such as WWF and Greenpeace.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Extremely poor to the extent of being farcical. The "high certainty" of warming has now been shown to be false, by the lack of warming over the past 15 years.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Data scamming is endemic. There are dozens of examples of data fraud, such as Darwin and Northern Russia.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Having a railway engineer as the head of the IPCC is a joke. The head must be a climatologist to add any shred of credibility.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

A open balanced forum with equal representation from both sides.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

No

11. Any other comments

No

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

All participants in all of these parts of the process need to be vetted for preconceived beliefs, conflicts of interest and not be receiving funding based on their work related to the IPCC. I know that this is difficult, but the current culture of the IPCC to date has been very inbred and bent on obtaining a predetermined result - global warming and evidence thereof.

3. What is your opinion on the way in which the full range of scientific views is handled?

I have a low opinion of the science as there has been no real criticism of the Hockey Stick graph, admission that the Medieval Warm Period was worldwide and warmer than now, CO2's half-life is falsely represented, the CO2 graph over time is false, being an unethical merging of two unrelated data sets with an 84 year offset, no recognition of solar cycle and natural cycles as they relate to observed temperature changes, wanton adjustment for no good reason of the temperature data to create the impression of warming (just plain fraud) and generally an amazingly bad use of papers of all kinds carefully selected to support a global warming conclusion which is not real. It is time to only look at the real science, open up the debate and get rid of the very biased, goal-driven, agenda-driven processes and scientists who have been dominant to date.

AND the water cycle and the huge global heat engine of water vapor MUST be recognized as a massive negative forcing factor along with the admission that computer models are not science and fail miserably at their current level of development as they do not incorporate the real laws of nature and out and out ignore major factors that must be included.

There is just plain too much bad science being included in the thinking in the IPCC. Its mission needs to be seriously revised away from showing global warming as a foregone conclusion and to a mission to try to predict through real scientific discourse where our planet is going next. Any observant person can see that our warm peaks have been becoming less warm each time since the Holocene Optimum and the conclusion would be that we are drifting slowly towards the next ice age. Understanding that is much more important than trying to cripple the world's

economies with a carbon cap and trade and creating a one-world, socialist government because Maurice Strong a a small group want it. The IPCC should not be a political tool and if it is, it should be disbanded entirely and finally as a bad idea, if politics cannot be kept out of it.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Science is not a government function. It is an intellectual endeavor. They can present funding for the expenses, but they should be out funding the research to further the process; it too quickly then becomes political and goal-driven. For science to be a useful and trusted tool, it has to be pure and not tainted with opinion and agenda.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Actually, the literature is huge because the IPCC covers a lot of ground looking for ways to show global warming. They have too as we are cooling and they have to fudge the data and make the water very muddy to make their conclusions sound valid - which they are not.

They need to define the problem more clearly, ask well-defined and specific questions and then look for related research that can provide the answers. If they had done this in the first place, they would have quickly found that man's CO₂ emissions have little, if any, effect on climate and might even serve to cool the planet a little bit. If one knows the science related to heat-trapping gases, these conclusions are rather easy. It is the politicians, particularly the individuals at the top of the IPCC who definitely have a political agenda, who want the IPCC work to appear monumental and something no one but they can understand. The actual problem is rather easy to ask and answer, but they have a political agenda and cannot have it that way. The top leadership of the IPCC need to be fired and replaced with more impartial, non-Maurice Strong approved people.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I am very incredulous when no matter what they find, there is a disaster attached. This just does not make sense. How can ever aspect of warming be so bad? Perhaps the findings should be sent to a separate body who has no conflict of interest with the IPCC goals. They always want there to be an impending sense of doom when then conclude something.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The only way you are going to have quality assurance and confidence in the validity of the data is to make it open to review and access by others. By allowing one group or a small number of groups to have access to the data and then present their version of it, then it is liable to being

perverted and "adjusted" to suits the groups' purposes, which are not always scientifically-based or even honest.

To date, I believe that the IPCC does not like to criticize any work, published data, or published analysis unless it suits their political agenda. When published work is shown to be wrong or erroneous, weakening the warming model, they go totally silent and let it slide. Remember, the IPCC mantra is that we are warming regardless of the fact that we are cooling - they say warming will resume. Well, sure, after 30 years we will start warming again, that's to be expected from natural cycles, but they will say that the cooling would have been worse, if it had not been for our warming effects. This is totally unfounded and an opinion, but points to the fact, that no matter what happens, they INSIST that warming is happening - they have faith that it is and that unscientific.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

IPCC's communications with the public is abysmal, being mostly R Pachauri who makes a joke out of the IPCC. He is a man without morals who would insist that the Sun was gone, if it suited his purposes. We really hope that he stays with the IPCC in its present form for, as long as he is there, he makes the IPCC the laughing stock of the world and people thus tend to discount what he says for the IPCC and the IPCC report. He serves the purpose currently of undermining the IPCC's credibility which is a good thing.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

First, the IPCC was set up for a political goal and was never meant to be truly scientific. Maurice Strong wanted the basis of a crisis to precipitate events to lead to a one-world government and he populated the upper levels of the IPCC with people with political goals and his agenda. The IPCC needs to be remade from scratch, if it is ever to have any scientific validity. I suggest scrapping it and starting over in order to lose the bad baggage that will haunt it for years to come.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Scrap it and start over, or scrap it and do nothing. There is no reason for it to be. We did not need it then, we do not need it now. Make some thing which is independent of the UN and start a climate institute, cut it loose and let it thrive, if it can.

11. Any other comments

It should be recognized that there has been a huge program of no-debate going on for years, a condition perpetuated by the IPCC. Al Gore as the poster-child. He refuses to debate anybody regarding the science that he is always saying is so solid. If it was, he would win a debate. But, he knows that he cannot and patently refuses all invitations to debate. This is what takes down the IPCC.

There is just plain no defensible real science involved in the portion of the IPCC "science" (they include tangentially many portions of real science that has no effect on the conclusions - that window dressing) that is used to make their conclusions.

Nothing is ever set in stone in science, the debate is never over, and science is not run by consensus. That is why the IPCC needs to be a totally open body with access by all and an open, vigorous, non-name-calling debate. The ad hominem attack and the contention that the science is settled are signs of someone losing the debate.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

The IPCC is widely seen as a comfortable club of academics exclusively drawn from the public or quasi-public sector.

The real world of the private sector is not allowed into this comfortable club.

All reasonable criticism of the IPCC is treated with contempt and the peer review system is highly flawed in that only those with 'sound' views are allowed into the review system.

The temperature statistics used are widely seen (correctly) to have been manipulated - especially prior to the 1940s - to artificially reduce historic temperatures. The models used to interpret these statistics are designed to prove AGW, yet are unable to duplicate the past. These models are then used to alarm the general public.

3. What is your opinion on the way in which the full range of scientific views is handled?

The concept of AGW is a theory, which may or may not be correct. Certainly, carbon dioxide is a 'greenhouse gas', but its impact is very limited - the concept of 'forcing' is complete garbage as

there is absolutely no evidence of this in geological history. In fact, there is more evidence of a 'negative' forcing.

The answer to the question is "badly". For credibility, include people who really understand the climatic past, namely geologists - preferably from the private sector, as they are not required to sing from the AGW song sheet in order to keep their jobs.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

As long as governments are seen as seeking to solely use the IPCC's findings as a scare mechanism to justify tax increases, then the whole process lacks credibility with most of the general public.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The IPCC should include acknowledged 'sceptics' in the process, so that alternative view points can be debated - remember AGW is a theory and not a fact, as much as unscrupulous politicians would like us to think otherwise.

Much of the data source is flawed by manipulation and mis-interpretation. Until such time, as all parties can agree that the data used is not flawed or falsely manipulated, the IPCC findings will lack credibility with most of the general public.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Start with an open mind and not with pre-conceived ideas. Bring the sceptics into the debate - the proponents of AGW, including the IPCC, are notorious for not being willing to debate the subject of climate change with sceptics.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The words 'comfortable club' and 'dogma' come to mind.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Begin with dropping scare tactics in order to ensure future funding.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

As the IPCC models - with the exception of forecasting carbon dioxide levels - are consistently wrong, I would suggest that you cease making forecasts.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Bring in people from the private sector. Move away from the comfortable club environment. Bring in people who really understand about historic climates, instead of trying to prove previous warm periods did not exist, which they did.

11. Any other comments

Increasing carbon dioxide will result in the world's temperature rising by maybe as much as 1 degree C over the next century. Natural cycles will probably reduce this increase. Using the theory of 'forcing', which is almost certainly wrong, to produce scary forecasts about future global climate is extremely unprofessional.

In any other field of science, the present level of knowledge about AGW would make it an interesting theory. In climate science it is seen as fact, which is clearly wrong.

Here is an interesting question: "What is the rarest creature in the world today?" Answer: "A private sector geologist (forget the nonsense about Big Oil) who believes in AGW". This is a group with strong scientific knowledge of the facts of historic climate, yet does not have to be concerned about future career or job prospects by not toeing the party line.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None (reporter)

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

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2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

In general I think the IPCC would benefit greatly from the inclusion of a shadow team of qualified scientists who have the specific charge to look at findings submitted to the IPCC critically.

More specifically, working group chairs should not have their own work as part of their group's submission. Nor should lead authors.

As for writing and review of working group reports, this should be done on a wiki developed for that purpose, with password protection and a series of linked weblogs for each section. The weblog would be used for outside comment on the section and would be moderated in much the same way that NASA's Gavin Schmidt moderates the weblog Real Climate.

3. What is your opinion on the way in which the full range of scientific views is handled?

The IPCC has handicapped analysis of findings by having far too many SREs. The SREs need to be updated, especially demographic sections, but also to include improved knowledge of cycles operating outside the natural environment, such as impacts on economic growth of elements of the business cycle which may have an effect on fuel consumption, efficiency and emission of GHGs.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I think the interests of the public, science, scientists and the IPCC would be best served if governments had no role in the commissioning, data collection, analysis or reporting of IPCC work product.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

This is something that crowd-sourcing may be able to assist the IPCC with. Using a mechanism such as that mentioned above, a wiki and weblog linked presence would allow introduction, evaluation and analysis of literature sources by a wider community, many of whom would be happy to look at sources but do not have time or formal credentials to participate more fully.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Bands of uncertainty should accompany all graphic representations of data. Written figures should always have +/- x%. In particular, the IPCC should carefully evaluate the uncertainties accompanying data from ensemble GCMs, and explain how treatment of uncertainty was arrived at.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The IPCC would benefit greatly from having both Corrigenda and Errata sections for every chapter of AR5. These should be posted on the internet with a mechanism for submission of inquiries, and regular reports on evaluation of submissions.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

A small Secretariat that outsources its primary work product to specific groups of tightly connected professionals will always operate at a disadvantage. Having senior management attempting to deal with daily public relations issues not only undermines their credibility and lessens their stature, at times of stress and widespread interest in relevant issues it detracts from the time and energy they need for management. The IPCC would benefit from expansion in several areas. One of those would be media relations.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Should the IPCC decide that an electronic presence is the appropriate mechanism for presenting and archiving its findings, there are numerous models of organisations that make their data a 'living document' where revisions are posted both at regular intervals and on an ad hoc basis. Although this slightly reduces the potential media impact provided by Assessment Reports, this is probably outweighed by the improved utility of the information available to policy makers.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The IPCC could co-ordinate with other institutions, notably trade associations, regulatory bodies, academic institutions and other governmental institutions at the European Commission, NAFTA, ASEAN levels for shared information relevant to their mission in exchange for increased funding.

11. Any other comments

The IPCC, through little fault of its own, is currently in a 'hole,' with its credibility challenged. It's important to note that the IPCC has done relatively little to help itself during this period, and that some of the IPCC's actions have served to make matters worse. A new approach is needed, and the IPCC's solicitation of outside opinion is perhaps the best start possible.

One tip--start publishing the results of these surveys and submitted comments now.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

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2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

See this link: <http://pielkeclimatesci.wordpress.com/>

3. What is your opinion on the way in which the full range of scientific views is handled?

Entirely feral. Dissent is treated as a species of mental illness, eg Chris Landsea and Paul Reiter resignations, lack of any answers to McIntyre and Mckitrick etc

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

He who pays the piper calls the tune. It seems that, in exchange for the lorryloads of cash the IPCC has received from western governments, it is duty bound to come up with recommendations 'in the public interest', ie those that support AGW

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Elimination of non-peer review literature entirely, most especially where these are provided by vested interests (eg WWF), overhaul of peer review process to include and encourage dissenting views/minority reports. Evidence of active consideration in the research of potential falsification. Permanent suspension without notice of those who have attempted to block these processes by (eg) threatening deleterious consequences for publications or colleagues etc. Rehabilitation of evidence provided by (eg) Soon and Baliunas (2003) etc. Full discussion of weaknesses and strengths of such material free of ad hominem and menace.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

See this link: <http://pielkeclimatesci.wordpress.com/>

7. What is your view of how IPCC handles data quality assurance and quality control and

identification and rectification of errors, including those discovered after publication?

See this link: <http://pielkeclimatesci.wordpress.com/>

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Identification and removal of persons responsible for self-consciously promoting untruth, or speaking with no evidence (eg) K Trenberth on hurricanes leading to C Landsea's resignation; Himalayan glacier scandal etc.

Open, not closed attitudes, to be de rigeur at all press/media events, including major conferences. Eg 'Serious consideration will be given to counter-views' rather than 'voodoo science', 'deniers' etc. In short, a positioning of the audience for the bad news: Science doesn't do certainty.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Publication of interim reports on the blogosphere/net, with an open invitation from interested parties for detailed and well-supported feedback. As an alternative, distinguished scientists (Peilke, McIntyre etc) to be targeted for their responses. If their verdict is negative, to be integrated eg in the form of a minority report.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

As above - elimination of vested interests, including those who have deliberately deceived. Identification of independent financial sources including private funds, non-vested-interest charitable and institutional sources in order to avoid charges of 'statist propaganda'.

11. Any other comments

The IPCC has received enormous sums from taxpayers world-wide, yet its leadership has in the past failed to display two things. Firstly, the integrity necessary for such a role; and secondly (even more importantly) an understanding of the logic of science.

For commitment rather than criticism has seemed to be its 'rallying cry'. Even today, it has yet to tell in full detail the story of its own downfall, starting with the release of emails from UCU in November last.

Whilst the IPCC seems content to play a game of smoke and mirrors, presumably to buoy up its standing with politicians already committed to AGW, these standards are unacceptable in any organisation whose concern is the dissemination of scientific research (or indeed, any research, private or public).

We may pay particular attention to the irrelevant fuss made about a supposed 'consensus agreement'. For 'consensus' was never the province of science, but rather of its opponents (the priests etc). Such dissembling appears to be grounded in an ignorance of the history of science, and the logic of its development. Science can be seen in contradistinction to theology, which the IPCC's pronouncements more nearly resemble.

If it is to survive, it must act now to put its house in order, perhaps by inviting its most trenchant critics aboard. If, indeed they are talking 'rubbish', then this will be immediately apparent from the public forums in which they are made to defend their ideas. Why has the IPCC waited so long?

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

The below information was a foot note in the IPCC 4 edition. It is obvious that there was no evidence to prove that the ghg effect exists.

“In the 1860s, physicist John Tyndall recognized the Earth's natural greenhouse effect and suggested that slight changes in the atmospheric composition could bring about climatic variations. In 1896, a seminal paper by Swedish scientist Svante Arrhenius first speculated that changes in the levels of carbon dioxide in the atmosphere could substantially alter the surface temperature through the greenhouse effect.”The key word is "SPECULATED"

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

I have previously submitted many documents that show that the "greenhouse gas effect" has never been proven. Therefore the amount of CO₂ or CH₄ in the atmosphere has nothing to do with global temperatures. If CO₂ or CH₄ have nothing to do with global temperatures Mann-made global warming is a fairy-tale. The IPCC should be scrapped. Why waste the money looking at a natural phenomena.

3. What is your opinion on the way in which the full range of scientific views is handled?

When there is peer reviewed work from 1909 by R.W. Wood a professor of physics and optics at John Hopkins University and the work in 1958 and many others that have examined the physics of the Concept of "greenhouse gas effect" that show that it does not exist it violates the second law of thermodynamics and the work of Niels Bohr then it is obvious that we need an experiment and data that either proves that the greenhouse gas effect exists or that the concept can not be demonstrated thus ghg effect is a hoax. When everything that the AGW group produces as evidence is really only "circumstantial evidence" that can have two or three other causes like the earths crust is heating from the inside or more or less solar activity, or the earths orbit has shifted just a little all are natural.

This whole this is so full of corruption that one wonders if the InterAcademy Council will have a "WHITE WASH" as the Brits or Penn State have done or will the expose the frauds that have been played on the world.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Pure corruption.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Peer review must be done by multiple discipline. Climate scientists may have some knowledge of what the claim but the big question is do they really know any physics or thermodynamics. What is a "climatologist" they are either temperature historians or they are fortune tellers that us flat screen crystal balls. I know 10 year old that have a better understanding that "climate is only thousands of weather end to end"

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Based on my point of view as an environmental engineer that knows that everything has some level of uncertainty it must be realistically evaluated and expressed in bold letters and numbers in the abstract. If the authors of a paper are not willing to show there data and methods of obtaining a results and conclusions they must be thrown out. Speculation is a fairy-tale and has no place in decision making especially when trillions of units of money are involved.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

It is very obvious that IPCC has accepted data that has been proven to be Mann-iplulated because it shows the conclusion they wanted -not the facts. The only way to correct this is to eliminate the IPCC. I have a personal e-mail from a manager of Energy at the National Academy of Science (junk science) stating that they accepted the IPCC reports without question, they have

corrupt "scientists" that are still pushing the lies. I wonder how many shares of stock they have in the carbon credit market?

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Eliminate the IPCC. They can not be trusted, they have destroyed the credibility of the scientific community by there proven lies.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

As I stated above "assessment models" are using Flat screen crystal ball. Garbage in is Garbage out" First we have to establish does the greenhouse gas effect exist by carefully controlled and reviewed experiments. I have developed some very simple set of tests that show that the ghg effect does not exist. I have reviewed a experiment done at the University of Bremen that claims to prove the Ghg effect it is impure junk science. I found at least 10 major errors or faults.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

If we really need an "IPCC" start over. All the money spent to date has been wasted by the corruption exhibited by unqualified Politicians that run the UN

11. Any other comments

The very recent work of a Law professor listed below must be reviewed along with the work of Alan Carlin of US EPA both show that Mann-made global warming does not exist. List of references:

The paper "Falsification of the Atmospheric CO₂ greenhouse effect within the frame of physics" by Gerhard Gerlich and Ralf D. Tscheuschner is an in-depth examination of the subject. Version 4 2009

Electronic version of an article published as International Journal of Modern Physics B, Vol. 23, No. 3 (2009) 275{364 , DOI No: 10.1142/S021797920904984X, c World Scientific Publishing Company, <http://www.worldscinet.com/ijmpb>.

Report of Alan Carlin of US-EPA March, 2009 that shows that CO₂ does not cause global warming.

Greenhouse Gas Hypothesis Violates Fundamentals of Physics” by Dipl-Ing Heinz Thieme This work has about 10 or 12 link that support the truth that the greenhouse gas effect is a hoax.

R.W.Wood from the London, Edinburgh and Dublin Philosophical Magazine , 1909, vol 17, p319-320. Cambridge UL shelf mark p340.1.c.95, i

The Hidden Flaw in Greenhouse Theory By Alan Siddons

from:http://www.americanthinker.com/2010/02/the_hidden_flaw_in_greenhouse.html at March 01, 2010 - 09:10:34 AM CST

The below information was a foot note in the IPCC 4 edition. It is obvious that there was no evidence to prove that the ghg effect exists.

“In the 1860s, physicist John Tyndall recognized the Earth's natural greenhouse effect and suggested that slight changes in the atmospheric composition could bring about climatic variations. In 1896, a seminal paper by Swedish scientist Svante Arrhenius first speculated that changes in the levels of carbon dioxide in the atmosphere could substantially alter the surface temperature through the greenhouse effect.”

After 1909 when R.W.Wood proved that the understanding of the greenhouse effect was in error and the ghg effect does not exist. After Niels Bohr published his work and receive a Nobel Prize in Physics in 1922. The fantasy of the greenhouse gas effect should have died in 1909 and 1922. Since then it has been shown by several physicists that the concept is a Violation of the Second Law of Thermodynamics.

Obviously the politicians don't give a dam that they are lying. It fits in with what they do every hour of every day .Especially the current pretend president. Paraphrasing Albert Einstein after the Publishing of “The Theory of Relativity” –one fact out does 1 million “scientist, 10 billion politicians and 20 billion environmental whachos-that don't know what” The Second Law of thermodynamics” is.

University of Pennsylvania Law School ILE INSTITUTE FOR LAW AND ECONOMICS A Joint Research Center of the Law School, the Wharton School, and the Department of Economics in the School of Arts and Sciences at the University of Pennsylvania RESEARCH PAPER NO. 10-08

Global Warming Advocacy Science: a Cross Examination Jason Scott Johnston UNIVERSITY OF PENNSYLVANIA May 2010 This paper can be downloaded without charge from the Social Science Research Network Electronic Paper Collection: <http://ssrn>.

Web- site references:

www.americanthinker.com Ponder the Maunder

www.climatedepot.com

icecap.us

www.stratus-sphere.com

SPPI

many others are available.

The bottom line is that the facts show that the greenhouse gas effect is a fairy-tale and that Man-made global warming is the World larges Scam!!!The IPCC and Al Gore should be charged

under the US Anti-racketeering act and when convicted - they should spend the rest of their lives in jail for the Crimes they have committed against Humanity.

The only thing more dangerous than ignorance is arrogance."
—Albert Einstein

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Is IPCC a body that has already made mind up before any science ,is this a perception or fact?

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

review must except other views

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

One sided ,biased

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

To much influence

5. Given that IPCC assessments consider a vast amount of literature, what are your views and

suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Look at the facts as presented are they going to give warming or not ,if not will you show this as your report.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Cloudy due to the manipulation of the data.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Poor to disgraceful

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I did not know that it does

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Stop doing the science back to front .Results then conclusion .

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Take out all the people ,scientists who have already made up there minds and start a fresh.

11. Any other comments

Will you be sending round the boys for a quiet word.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

On the technical side the IPCC has apparently developed a process to include a small group of insiders and exclude non-affiliated outsiders (and a number of affiliated ones). On the policy side, non-climate experts seem to be welcome as long as they are in complete agreement with

this insider philosophy. I would submit that the IPCC needs a process that "opens up" and widens the scope of the organization.

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Policy questions have been too narrowly developed.

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

b.-h. The remainder of this process has been crafted in such a way that the general public has been unable to see how it works. The down side is that an open process can become politically incorrect and messy as the media focuses on controversy. The positive side is that the players are required to be polite and focused and the final result is more likely to be acceptable to all of them and the public.

3. What is your opinion on the way in which the full range of scientific views is handled?

Policy, special interests and politics have been much too important in sorting out the variety of scientific views.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Since governments are funding this process their technical and policy roles cannot be denied. However, especially on policy matters, some sort of more transparent and structured plan to develop clear cut requirements and limits of these roles should be considered.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

In the end, policy developed from the technical reports is a process of ideas. In order to be more comprehensive in utilizing the literature (not only scientific, policy, or other sources) the authors and chairs must be encouraged to be open to a wide spectrum of ideas (and inputs). A fundamental issue of data source selection and testing is being missed and is of extreme importance (across all IPCC efforts).

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

This is one of the most serious flaws in the IPCC reports. It is becoming a major issue with the general (and of course the unaffiliated technical) public concerning the credibility of the reports. Uncertainty must be honestly and clearly acknowledged in all aspects of the reports. Policy issues cannot be allowed to drive the science in this case.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

As I noted in 5 above this is my greatest concern about this process. Before the IPCC worries about data quality and control during its use by the teams, the IPCC should assure that the teams are using the best data available. Some effort in gaining approval by the scientific community of accepted and validated sets is absolutely required. I have no confidence this has been done. It goes without saying that mistakes MUST be acknowledged as soon as they are found.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

As in any scientific and technical endeavor, the unknown seems to always far outweigh the known. The IPCC must at times readily admit that it does not have all the answers. On the positive side, this allows the IPCC to gather ideas from a much wider group by admitting this. The public will more likely trust this type of process and join in it to actually support the policy direction that is ultimately developed.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The model needs to be widened. The IPCC has been too quick to develop policy from the early technical findings. A more deliberate and inclusive effort is needed. Policy ideas can be started but don't start eating the bread before it's cooked. More strategy sessions that include a wide variety of people would probably be useful in this process.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Less politics and more technical and managerial credibility for a start. I have no idea what the funding structure is. Without a very good manager, making funding issues more transparent could possibly be embarrassing to the organization. Being able to be completely transparent about funding issues increases the credibility of the IPCC.

11. Any other comments

Understanding and preparing for climate change may turn out to be the most important thing that we do as an international group. The IPCC seems to have gone off track as far as actually dealing with all the issues involved in this basic idea.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

Lack of mandate; Lack of scientific rigour; lack of independent assessment and audit; too much political control; a new chairperson who is a raging global warming fanatic with zero objectivity and a pre-determined agenda;

3. What is your opinion on the way in which the full range of scientific views is handled?

Poorly. Too much influence from the NGO eco movement. Lack of objectivity, Lack of knowledge and relevant expertise, too closed a community.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Wrong!!! They have no place in the scientific process.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Consider no pamphlets, brochures or research from Greenpeace, Friends of the Earth etc. Allow no NGO membership of the review and report process.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Uncertainty must be clearly defined and honestly given with no journalistic prose

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

They don't. I want to see the IPCC disbanded. It has no place in the debate It is not needed for any purpose, not coordination, not governmental, not governmental analysis and policy.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

It lies and exgerates and provides a fictional distortion and bias of the materiels it has.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

It will be sustained in order for the elite to make more money out of the fraud that has been their previous modus operandii.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Scrap it. We don't need you, we don't want you you are merely a nuisance and a barrier to good scientific method.

11. Any other comments

You have lied and distorted the reality of the physics of the planet. You have supported and been supported by the ecocentric communnity for their purposes and for their benefit. You have added nothing to the open debate of global warming and have nothing to contribute in the future.

You have been and will remain a complete waste of money with zero value add. Go away and leave the rest of alone. You aim of a world government based on the EU model will not be allowed.

Perhaps you could explain how it is that man can control the climate of our planet but can't forecast the weather 1 day ahead. Please explain how you will control ALL elements of the climate. As a physicist I surely don't know so perhazps you geniuses do. PLEASE EXPLAIN in full detail or go away.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

Poor throughout; many self-important people or people with little or no experience of the field they have been given to work on have been put in positions for which they are unsuited.

3. What is your opinion on the way in which the full range of scientific views is handled?

Poor and biased.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Disasterous.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Use only properly peer-reviewed information. Use only data taken from properly sited and calibrated sources and sites, and use longest possible time scales.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Take views from all parts of the spectrum.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Apallingly badly.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Apallingly badly. Tell the public what the science says, not what politicians think the science says, nor what the politicians would like the science to say.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Don't use models that do not have ALL the data that they need. (This just about means that at present it is not possible to believe the predictions of models because we don't know enough yet to programme them properly.)

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Disband the whole thing and let real scientists get on with investigating what is really happening without interference from politicians and business.

11. Any other comments

No.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

I want to comment specifically on item "c". I think that it is a mistake that the lead authors in each section are for the most part the same persons whose published work is being presented in the section. This creates a huge conflict of interest that has undermined the credibility of the IPCC. Roger Pielke, Sr. has written frequently about this conflict of interest and I fully agree with his criticisms. The disclosure of the so-called "climate-gate" emails has demonstrated why there is a need to select as lead authors unbiased and well-credentialed scientists who do not have a stake in the publications under review.

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

I think the IPCC has done a poor job. Roger Pielke, Jr. has repeatedly complained that this work has been misrepresented in the IPCC. I am familiar with the publications presented in the Paleoclimatology sections and I think that the presentation is biased and misleading.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I don't know how one can have an intergovernmental panel without governments playing a significant role in the entire process so it is unclear what this question is asking.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

I don't have a problem with non-peer-reviewed literature being included as long as it is clearly identified as such. The IPCC's credibility has been undermined because claims were expressly made

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I think that it is improper to include descriptions of uncertainty that sound as if they are based on statistical methods, but are merely subjective appraisals.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I think the revelations of poorly sourced information shows that the quality assurance and control processes need improvements

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

no opinion

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions

for an alternative process?

no opinion

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

no

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

Negativum if the process of IPCC assessment processes is domination of so called "alarmists", so in advance there was accepted that fossil burning and following CO₂ production is the primary factor of climate changes. Probably, it is not so. Formally the process was O.K., but this unproved assumption can lead to false conclusions.

3. What is your opinion on the way in which the full range of scientific views is handled?

I do not know, what does it mean.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments are responding mostly in formal way; their engagement is influenced mostly by the international pressures, because responses need funds. Therefore here in Slovakia in general the climate change as a fact is accepted, wide research is going and reactions will be approved after final statement of scientific community.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

In my opinion the desorientation is made mostly by the wide range of scenarios, which differ significantly. The basic decisions should be based on results of measurements, they are provided more than 150 years; construction of scenarios must be made carefully. It is difficult to limit flow of information, therefore majority of people are not oriented properly.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

To clearly declare possible uncertainties, to tell that our conclusions are hypothetical, but we must be ready to react even on worst scenario, if necessary.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Technically, IPCC works reasonable. But, scientists involved in its work speculating more than facts allow should interpret the data carefully. I mean, it is necessary to take seriously even people (I am among them) do not supporting the decisive role of antropogenic activity in clima change.

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

CLA, member of a task group

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Overly steered by senior inner core scientists trying to work within a framework emanating from self interests of the governments, and a weak identification of near term (3-5 decade) key policy issues in favor of issues elevated on the agenda for motivations other than altruistically seeking a best understanding of global response to the challenges.

2b. Election of Bureau, including Working Group chairs

Transparent rules but opaque implementation

2c. Selection of lead authors

Transparent rules but opaque implementation

2d. Writing of working group reports

In the AR4 the co-chairs had a very strong role in determining the final product ... the end outcome is hardly different from the initial scoping. This points to rigidity in the face of evolving needs, context, and science. Barriers (and politics) between working groups had a detrimental impact on the final product which arguably led to part of the problems that have recently emerged. The (admirable) rigor of WG1 constrained the transfer of knowledge to WG2 rather than, arguably, the perspective that the agenda of WG1 should be responsive to the needs of WG2. The ever-present rigidity of the governments approval as a backdrop to the process limits the way in which the evolving assessment was free to adapt to emerging understanding. Authors are hampered in preparing optimal materials for best communication of their understanding ... being volunteers (and somewhat abused as such!) without resources there was little more that they could do. For example, it would be far better if there was a communication and graphics team available that the chapters could draw upon. Many of the difficulties were associated with the communication rather than the preparation of the materials. Likewise, giving authors resources and flexibility to undertake limited post-processing of available data sets for the purposes of the assessment would greatly help.

2e. Review processes

Adequate, but the review editors could have been more involved in integrating the chapters and especially in helping the chapters tailor the material from cross-working group benefit.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

No comment

2g. Adoption of report by the IPCC plenary

An entertaining process! More seriously, the adoption criteria should be more sensitive to real-world decision making and risk management needs as opposed to government political interests.

2h. Preparation of any special reports

the lead-lag relationship between special reports and other activities is sub-optimal for benefiting the chapter authors in the assessment writing process.

3. What is your opinion on the way in which the full range of scientific views is handled?

It was very good, although at times and in places biased by personalities. The cry about skeptic viewpoints is seldom valid except for those few issues where there are credible alternatives rather than the more common strawman positions which have little supporting evidence. The balance between assessing uncertainty and confidence with regard to dissenting opinions is weak.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The governments play a valuable role in setting a framework. However, their influence is too strong in regards to national versus trans-national interests. Likewise the rigidity of the framework appears to be related to inflexibility of the government approval process which can constrain what the scientist view as most important. I would suggest that governments set the meta-framework ... the big picture ... but allow the authors greater freedom to evolve the assessment structure.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

It would help if the IPCC gave greater attention to the boundaries of their mandate and recognized parallel activities in the international arena. By this I mean the IPCC at best provides a snapshot in time of already dated material -- this is useful in so far that it integrates disparate information. But in the rapidly evolving science of climate change the potential exists that the IPCC material, on publication, stands at odds with other more real-time products. A stronger role (with resourcing) for activities such as the TGICA would help, especially if the assessment reports explicitly recognized the growing number of alternative information resources.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Scientifically good, but practically weak. It fails to accommodate the fact that climate change dominantly impacts society through changing the exceedence frequency of thresholds. The change may be uncertain ... weakly statistically significant ... yet practically extremely significant. For example, an agricultural system that operates on the margins of viability: a small change in the regional climate which may be characterized by high uncertainty may be critical if the change causes an increase in threshold exceedence beyond the point of sustainability. Thus casting the climate change information in the context of real world vulnerability, rather than scientifically defined uncertainty would be a helpful step.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

There has possibly been a tendency towards not wanting to acknowledge these situations. This is not necessarily for lack of concern for these, but lack of resources/skills to engage in appropriate data quality control.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

It has tended to take the authoritative high road ... presenting a product as "this is it, take it or leave it". Consequently the communication is a step behind what innovation and technology could offer. Again this is likely constrained by the lack of resources and/or appropriate skills.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The current approach was good for the 1990's and even perhaps up to the TAR. The approach is becoming less and less sustainable in its current form due to the volume of information, the need to become more nuanced, the urgent needs of regions, and the dynamics and rapid evolution of knowledge. There are many options one could suggest, some key concepts could help:

a) Have a process that is flexible to respond to the evolving nature of the science. As it stands the IPCC schedule is having a detrimental impact on the global base research agenda with the research activities being steered by the IPCC timing.

b) Re-focus the assessment to better address regional needs on spatial and time scales of relevance (GCM maps are largely useless for most nations).

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

These aspects are largely fine in and of themselves, but they are hindered by the very rigid regulations. Giving authority at various levels is not well matched by the flexibility to use that authority.

11. Any other comments

The IPCC is a singular iconic activity of recent decades, and of inestimable value. It has catalyzed and contributed to a global research community effort that is unprecedented in the history of science. The challenge is to evolve the structures with the needs rather than lag the needs (as seems to be happening).

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

All of the above are irrelevant as the organisation is based on a self fulfilling prophecy and should be disbanded.

3. What is your opinion on the way in which the full range of scientific views is handled?

The organisation suffers from institutional alarmism and appears to spend a large proportion of its time promoting unfounded assertions about the future.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The organisation is a political organisation and has no role in science.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The IPCC is constituted of a small cabal of scientists who are and have been actively engaged in acting in concert to arrive at the conclusion that the world is warming dangerously. I cite the leaked climategate emails which demonstrate this point beyond all doubt.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The reports of the IPCC are at best guesses and at worst just made up.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

It is not a question of the rectification of errors, the question that needs addressing is the IPCC deliberately has misled the people with unfounded alarmist nonsense.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The IPPC should be banned, it is very good at propaganda and it is only due to the scrutiny of people on the web that the distortions and falsifications have been revealed. There is no need to improve its communications with the media because it has already got its pre-determined message that we are all doomed across.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The models used are of no relevance because of the complex nature of the systems. You would be better off reading tea leaves or seriously looking at historical records.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Yes, the IPPC should be disbanded and the jollies stopped.

11. Any other comments

Spend the money wasted on the IPPC by providing clean drinking water to the poorest areas of the world. Carry out a judicial review into the waste and misleading of the public by IPPC members and self named climate scientists.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

I'm a statistician with a specialty in extreme value statistics. To the extent I've followed the discussion, the possibilities to quantify and extend knowledge which is given by statistics has so far been exploited much less than it could - which to some extent may have hurt the IPCC.

3. What is your opinion on the way in which the full range of scientific views is handled?

Maybe somewhat more openness from climate science re uncertainties may have been better from the view of influencing public opinion, and for research itself.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

None

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Be careful in presenting exactly the status of the data and research which conclusions are based on. Maybe peer-review or not is not the basic criterion, but it is important for readers to know what is what.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Not good enough - one instance of this is too little and too amateurish statistical analysis.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Do not know enough to comment.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Reasonably OK.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

No informed view.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

No.

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

a. Preparation of any special reports

Be somewhat more careful of the wording, especially in the The Summary for Policy Makers
Possible differences of opinion should be mentioned.

3. What is your opinion on the way in which the full range of scientific views is handled?

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

This has to be honestly addressed, but always make the point that a degree of uncertainty is always present. Sometimes an estimate of the probability of correctness may be appropriate.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

This should always be in accordance with good scientific practice - for the most part. this is the case. Slipups are hard to avoid.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

An executive summary - in fairly easy-to-understand terms should always be provided. Keep facts and recommendations based on same separate.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

sorry, no suggestions.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

no

11. Any other comments

It might help to mention collateral benefits, in addition to climate aspects, of any recommendations that you make

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

The IPCC process as a whole is very rigorous and a somewhat cautious/conservative approach to scientifically understanding an extremely serious environmental problem.

Working groups 2 and 3 should aim to have consistency with working group 1. A specific panel should be appointed to ensure that this happens.

3. What is your opinion on the way in which the full range of scientific views is handled?

The full range of scientific views are handled adequately, that is those with good grounds for scientifically-based skepticism are heard and respected. Non-scientific dissent/skepticism has no place in the process.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Non-scientist government representatives should have little influence on the process, since it is a scientific review.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

As stated earlier, working groups 2 and 3 should aim to have consistency with working group 1. A specific panel should be appointed to ensure that this happens. Peer-review is essential for WG1, for the others, there is no easy answer.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

i believe uncertainty is handled in a scientifically-reasonable way, it is just in communication of the uncertainty to non-scientists that the problem occurs.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

This has been a slight problem in the past, but the IPCC should emphasize how rare these occurrences are.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The IPCC need to develop better links with the media so that the media recognize that they are the largest group with the most definitive assessments of climate science.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Reports every 5 years, instead of ~6.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

No

II. Any other comments

Keep up the good work!

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None (participant in other assessments)

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

I have little direct knowledge of these steps within the IPCC, although I am broadly familiar with how we did things in the Millennium Ecosystem Assessment. Review processes can almost always be strengthened, and my sense is that there is at least some potential for strengthening here (and relieving time pressure on a small pool of reviewers as much as possible - which can lead to haste and excessive weariness) as the IPCC moves forward.

3. What is your opinion on the way in which the full range of scientific views is handled?

The IPCC engages in as neutral and comprehensive a weighing of the scientific evidence and views as possible, even if it cannot perhaps be always 100% dispassionate.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments seldom participate substantially in my part of the world, Africa, but it is essential that they continue to have the opportunity to be integrally involved, not only in nominating specialists but also in reviewing the drafts.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

It is almost a superhuman task to sift through the vast literature base, which grows at a daunting (if not exponential) rate each time a report is being prepared. It is essential that any non-peer reviewed literature be scrutinized heavily, and except in the most urgent circumstances I am not generally in favour of using any - especially in this age of internet publications and ideologically biased bloggers.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Frankly, I think it has been about as excellent as is possible to be. What other body of knowledge of such global import for civilization is as carefully assessed, with confidence limits??

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I have not seen every example of rectification of errors, but I have been entirely confident in the quick and balanced rectification of those I have seen.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I don't have suggestions for improvement. This is a place for clear and scrupulously substantiated messages, but not for spin doctors.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I can only say that it is potentially extremely unsustainable in terms of human health. Of the seven significant South African scientists working at high level on climate change and involved directly or indirectly in the IPCC, I believe 5 have been hospitalized for overwork-related stress illnesses in the last decade. It is important to keep an adequate level of continuity in the process, while easing up on the workload. The Millennium Ecosystem Assessment model of having sharp postdoc research assistants (to locate and initially sift literature and datasets) for working group co-chairs and lead authors could perhaps be extended further in the IPCC.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

No, except that the funding structure must support adequate assistance for the assistants mentioned above. The smooth adjustment of the world to an altered climate regime depends on the reliability and robustness of the IPCC process, so we shouldn't scrimp on this issue.

11. Any other comments

Thanks for the opportunity to comment!

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None (journalist)

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

A crucial question is whether the focus of IPCC was wrong from the start by focusing purely on the potential role of man made global warming. We need science historians to figure that out. The growing certainty in the four IPCC reports that CO2 is the main culprit reflects more the demand for a clear answer from policy makers than the advancement of the scientific evidence for the role of CO2, in my opinion.

2b. Election of Bureau, including Working Group chairs

Working group chairs are always strong believers in the AGW hypothesis. This will have impact on the supposed neutrality of the assessment. There should be more balance in the choice of these chairs.

2c. Selection of lead authors

Here the inclusion of scientists with different perspectives is even more important. John Christy was the only outspoken sceptic who contributed to WG1 of AR4, but only as a contributing author. Without having scientists with different perspectives in the lead author teams, the danger of scientists confirming their own beliefs is very real.

A second big problem is that lead authors are promoting their own work in the chapters and are often asked to give an 'objective' opinion about controversies in which they themselves are involved. A clear example of this in AR4 is Phil Jones who promotes his HadCrut3 graph meanwhile ignoring literature (Michaels/McKittrick 2004, 2006) that raises serious questions about the reliability of this graph. A second example is Briffa as lead author of chapter 3, where he, as a member of the Hockey Team, defends the hockey stick, and ignores the divergence problem (i.e. the fact that his temperature reconstruction based on tree rings is going down after 1960).

A third problem is that IPCC didn't seem to take resignations of authors, like Paul Reiter and Chris Landsea, very serious. They are both quite critical about the relation between AGW and malaria and hurricanes respectively. It's highly disturbing when such well recognized experts are so disappointed by the process that they resign, but IPCC did nothing at all to investigate this or to make clear to the world what happened exactly.

2d. Writing of working group reports

see e.

2e. Review processes

As scientists with criticism about aspects of the AGW hypothesis are not in the lead author teams, their role is limited to that of the expert reviewers. So how the lead authors deal with comments on the first and second draft is crucial for the final outcome. It's a big improvement that all comments and reactions of the lead authors have been made public during and after the publication of AR4. However, reading the comments and the reactions of the authors, one can only get the impression that most of the lead authors are completely unwilling to let criticism on the AGW hypothesis through to the final report. Look for comments by McIntyre and McKittrick on chapter 3 and 6. So, in principle the process is fine and quite transparent, but in practice it fails for the simple reason that lead authors are unwilling to accept criticism on their own work and views.

Finally, the role of the review editors is very important. IPCC procedures state: "where significant differences of opinion on scientific issues remain, such differences are described in an annex to the Report." When their reports were finally made public after requests from David Holland (see <http://climateaudit.org/2008/04/01/ipcc-review-editors-comments-online/>) it turned out that 25 of the 26 review editors of WG1 signed a standard form letter. Only one, John Mitchell of chapter 6, sent in some comments. None of the review editors felt it necessary that differences of opinion should be described in an annex. Given the substantial criticism from expert reviewers this can only mean that the editors are fully on the side of the lead authors. Again, a lack of balance in the choice of these people leads to a less objective assessment than promoted by the IPCC itself.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

It's unfortunate that the SPM is released before the report itself. Journalists have to accept claims in the SPM without having access to the full report. This is strange and would not be accepted in other fields, let alone in industry.

2g. Adoption of report by the IPCC plenary

IPCC could be much more open towards the media in that stage. As far as I know all final meetings are closed for the media.

Slightly off topic: in 2009 I wanted to attend a WG1 meeting of IPCC lead authors. I asked Susan Solomon by email, but the request was refused. Later an IPCC lead author told me this is just for practical reasons. They don't want these meetings to be too big. But given the recent criticism about IPCC, more openness in this regard should be a step forward. Holding closed meetings gives the impression - that we also get from the climategate emails - that IPCC authors

are discussing tactics how to deal with 'the sceptics' instead of just doing the job the best they can.

2h. Preparation of any special reports

no opinion

3. What is your opinion on the way in which the full range of scientific views is handled?

This is in my opinion one of the biggest failures of the IPCC reports. There are currently more than a handfull of hypotheses around in the literature to explain the recent warming. Some of this literature is mentioned in the IPCC reports, but only to be dismissed immediately.

It should be a high priority for IPCC to form a seperate team of really independent scientists (senior scientists from other fields) to make an inventory of the alternative views that are described in the literature. In the next assessment report there should be much more attention for these alternative hypotheses. To mention a few:

- 1) The role of clouds and water vapor as negative feedback instead of positive (Lindzen, Spencer)
- 2) The role of oceans (ENSO, PDO, AMO etc.) (Spencer, Swanson/Tsonis, Compo/Sardeshmukh)
- 3) The role of the sun which itself has different sub-hypotheses:
 - 3a Based on Total Solar Radiation (Scafetta, Soon)
 - 3b Based on the role of UV in the stratosphere (Van Loon/Labitzke)
 - 3c Based on the relation between Cosmic Rays and clouds (Svensmark/Christensen, Veizer/Shaviv)
- 4) the role of other human forcings than CO₂, e.g land use changes, soot and nitrogen deposition, the biogeochemical effect of CO₂. In this respect I should mention this interesting essay by Roger Pielke sr and a large group of scientists:
<http://pielkeclimatesci.files.wordpress.com/2009/12/r-354.pdf>

They mention three hypotheses of which only one can be true. Their preferred hypothesis is hypothesis 2a: Although the natural causes of climate variations and changes are undoubtedly important, the human influences are significant and involve a diverse range of first-order climate forcings, including, but not limited to, the human input of carbon dioxide (CO₂). Most, if not all, of these human influences on regional and global climate will continue to be of concern during the coming decades. If true this is crucial information for policy makers, because it means that a focus on CO₂ only will never lead to efficient policy decisions.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments are trusting the IPCC far too much. The IPCC reports have a monopoly position. This is acceptable when enough checks and balances are incorporated in the production of the

reports. There are no real checks and balances however, not in the meaning these terms have in the industry.

IPCC is relying on the peer review of journals, but as every scientist know, this is an easy to pass filter, especially when an article confirms the current paradigm.

Also, IPCC has no rules for data archiving and sharing. This resulted in Phil Jones not making his raw temperature data available, even when critics asked for this data via FOI requests. IPCC nevertheless uses these data as one of the basic pillars in their global warming edifice.

Thirdly, IPCC has no rules for conflicts of interest. Lead authors can work for industry or enviromental organizations. The chairman of the IPCC can work for banks and even emission trading firms without breaking IPCC rules. In any other field this would be highly disturbing but so far governments haven't paid attention to this in the IPCC.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

My answer is limited to WG1. Instead of trying to be complete, this report should focus much more on the really crucial issues: What are the natural and anthropogenic forcings that influence the climate, what are the relevant feedbacks? How can we decide whether feedbacks are positive or negative? How good are the models? Which models are the best and for what reasons? Many of these crucial issues are now buried deep inside the report instead of highlighted in the summary.

Progress would be much faster if supporters of AGW and sceptics would be forced to sit together at the table and discuss where the consensus is and where the discrepancy. This worked when the satellite temperature of Spencer and Christy were challenged by Mears and Wentz, it worked when hurricane specialists sat around the table to come up with a consensus statement.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The currently used terminology (likelihood) is misleading. A claim like it's very likely (90% certainty) that recent warming was due to anthropogenic greenhouse gases gives a false sense of certainty. This 90% is not based on statistical calculations but on expert judgement, but few people outside IPCC realise this.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

As I said in answer to question 4, IPCC should pay much more attention to data availability, quality and control. They could simply require that when articles are mentioned in the report, data and source code should be archived.

It's impossible for lead authors to check all the data themselves. This is not necessary however. They should focus first on data on which important claims are based, like the global average temperature, the hockey stick, cloud data, water vapor data etc.

It should be possible to rectify errors after publication. The problem is that errors are often subjective. McKittrick (of Michaels/McKittrick 2004 and 2006) and De Laat (of De Laat/Maurellis 2004/2006) were very disappointed by the way IPCC misrepresented their work in chapter 3. What was written in the final report was not even in the second draft, so it was not reviewed at all. After the publication of AR4 De Laat and McKittrick had no means to correct the misrepresentation of their work. It's not directly obvious how one can prevent this. It should be possible however for scientists to complain to IPCC when they feel their work is misrepresented.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

As I wrote earlier, in my opinion IPCC should be more open to the media. I see no reason why WG1 meetings or other meetings should be closed for journalists. This conflicts with their supposed open and transparent process.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I don't think the current approach will be sustainable, especially now more and more journalists and policy makers are beginning to realize that the process is much more onesided than they thought.

As an alternative I like the proposal of John Christy to start a Wiki-IPCC. Small and balanced teams of scientists working together on the crucial topics I mentioned before. This has the advantage that they can update their consensus statement whenever there are important developments in the observations or in the scientific literature.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The IPCC is officially policy neutral. However in their public statements both the chairman and the secretary make clear policy suggestions all the time. In terms of Roger Pielke jr, is IPCC an honest broker or an issue advocate?

In my opinion they should operate as an honest broker, but as this moment they are clearly an issue advocate. The scale of the assessment should be reduced. Given the huge uncertainties in WG1, a lot of the information in WG2 and WG3 is pure speculation. WG1 should focus more on the crucial issues, and the size of the WG2 and WG3 reports could be greatly reduced.

11. Any other comments

I hope the IAC review panel will listen to all parties in the debate, i.e. including well informed critics like McIntyre, McKittrick, Pielke sr etc. So far I am pleased by the openness of the IAC review panel. I would encourage the panel to make all the information they acquire (submissions, interviews, documents) available on their website.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

Your process, from what I've learned in a course on climate change, listening to expert lectures, Copenhagen conference attendees, and from reading several books on the subject of global climate change, the IPCC is incredibly thorough in assessing the state of knowledge in this field among scientists around the world. If anything, the need for consensus appears to slow the process down, and to conclude with what could be considered somewhat conservative reports, i.e., under-estimating the current impacts to the environment and humans from global climate change. Finally, there doesn't appear to be a minority opinion in the final report.

3. What is your opinion on the way in which the full range of scientific views is handled?

See above. I think the process you follow is thorough, careful, and exhaustive. The chairs do a tremendous amount of work, without compensation except for travel expenses. If there were compensation for participants, would there be a broader participation by more knowledgeable scientists?

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments receive the next to final, and final report for senior government officials. I think governments should receive these reports, and that you should continue to leave governments out of the process of preparing the reports. Governments role is to take the scientific consensus and use this as a basis for policy development, regulations and laws to implement social change to

match the scope and impact of climate change, both in adaptation where feasible, and mitigation where essential.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

I recommend the use of peer-reviewed literature. If you need to expand the scope of your research into the scientific consensus, you could consider reviews of scientific government agencies (e.g. NASA, NOAA) and societies reports and research (e.g., AAAS for United States), if you don't already consider such reports.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I agree with your use of likelihoods (95%, etc.) and description of each category. The use of such a scale makes it much easier for the lay person such as myself to assess risk. You could also create a scale (numerical and word definition) for consequences, if you don't already.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Well, I know it is impossible to catch all errors in these reports. Quality control is most important in the first published reports, since an error here would likely propagate to the final summary report for government officials, assuming that no new data is presented in summary reports that isn't already published in the earlier round reports. It was unfortunate that the error on Himalayan glacier loss due to ice melting, change in precipitation, etc. wasn't caught, as the deniers used this error to try to put all the science into question. A trade off between scope of data presented and scope of quality control efforts is needed. If you were to change, I would marginally reduce the former and expand the latter.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I don't really know how the IPCC communicates with the general public. What I've learned has been from classes, talks, reading books and articles written by journalists with some science journalism training. I don't recall reading a newspaper article with an interview of an IPCC official, or seeing an interview with an IPCC official on the PBS Newshour, for example.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The subject of global warming has been news for perhaps thirty years now. My opinion is that the science is well-established, that scientists will continue to take data, refine their models, and improve the accuracy and scope of their predictive capability. I think the IPCC needs to expend

less effort on assessing the state of the science, and spend more effort on assessing the state of mitigation and adaptation science and public policy, on the global scale.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

I question whether the next conference in Cancun will result in a better outcome than did Copenhagen. The reason is that the U.S. is not making significant political progress in moving society toward a lower carbon, sustainable economy. Exceptions exist such as at the state level, for example, in California. Since 90% of the CO₂ emissions are generated by fewer than ten countries (approximately), would it not be a better approach to have these ten countries work within the IPCC framework and draft a set of binding emission levels that all can meet, with verifiable measures of progress? The other nations would participate by agreeing to transfer of technology, third party monitoring, payments to under-developed countries for mitigation and adaptation, etc. This would not be compatible with the U.N. requirement for full consensus, but it may improve the likelihood of a more substantive agreement than that which was issued in Copenhagen.

11. Any other comments

I admire the IPCC staff and volunteers who contribute greatly to addressing this most pressing global challenge to all of us, for your tireless work, patience, integrity in the face of deniers and the unwarranted press time they receive, and perseverance.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

My sense is that steps e and f significantly weakened the input from the scientific groups/lead authors, and injected an undue political influence

3. What is your opinion on the way in which the full range of scientific views is handled?

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The US government, in particular, exerted undue influence in weakening the statements and positions of the scientific reports

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

Main strength: c, d, e, h

Weaknesses: e Should be more open to divergent views

3. What is your opinion on the way in which the full range of scientific views is handled?

Generally very scientifically in particular working group I

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Government should not be directly involved

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Only peer- reviewed literature shall be accepted

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I believe this has been handled well in working Group I, probable less so in the other working groups

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I believe the error that has been reported are insignificant and has been corrected when identified. Unfortunately, trivial issues have got too much media attention

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

This can be improved and is required in our time. This can best be done by considering staff extensions.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I believe the present procedure is working well. I have no proposal in the procedures but highlight the need to have competent people in charge that have a high scientific standing. Working group I is setting a good example.

10. Do you have any suggestions for improvements in the IPCC management, secretariat,

and/or funding structure to support an assessment of this scale?

I believe the main office need staff enhancement. See point 8

11. Any other comments

1. I believe the present frequency of main reports should not change. If anything they may be produced less frequently. The countries of the world can act on the information that has already been provided.
 2. There could be a procedure to produce special report
 3. It is a good procedure to replace the Head of IPCC for every main report (every 4-6 years)
-

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None (user)

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

- 2a. Scoping and identification of policy questions***
- 2b. Election of Bureau, including Working Group chairs***
- 2c. Selection of lead authors***
- 2d. Writing of working group reports***
- 2e. Review processes***

a-e: I am not able to comment

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

As we have learned, it is important to follow rigorously the processes to ensure the quality and consistency of the reports. On the other hand this is time consuming and as a result the reports can not take into account the most recent scientific findings.

I think at least 2 improvements are needed:

- 1) to publish corrections to errors in the reports on the IPCC webpage
- 2) to publish intermediate reports summarizing most recent findings, maybe also on more specific topics (as e.g. sea level rise)

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

see point 2 above

3. What is your opinion on the way in which the full range of scientific views is handled?

Cannot assess.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I would prefer giving the decisions on the synthesis reports to scientists only, taking governments out of the process.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

See point 1 under question nr 2.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I cannot assess the handling of uncertainty in the working groups and reports, I just understand that it is extremely difficult to communicate the uncertainties to the wider public.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

See poin 2 under question nr 2.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I find IPCC trustworthy, but I also think that IPCC would need communication professionals, not only scientists.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

No.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

I think it is not sustainable that the IPCC leaders, including the President, are not paid for this job. It should be a full time job to lead the work of IPCC.

11. Any other comments

No.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None. Such problem must be solved by scientists, having in mind objective facts, not by politicians, lobbies paid by certain groups of interests and, mass media etc.

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

See statement before.

3. What is your opinion on the way in which the full range of scientific views is handled?

It must be handled by independent researchers, not by voting.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments must not interfere in the process, must be impartial.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Non-peer-reviewed literature must be thrown into waste basket.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Real facts have small uncertainties. The phenomena are very complicated, depend on many parameters, some processes are stochastic, therefore the models have rather large uncertainties.

However this is not the reason to reject the bare facts indicating real changes in our atmosphere and its climate.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The authors of original papers must estimate by themselves the error bars etc. Having in mind that there are many financial, economical and political groups interested in compromising climate change, it is necessary to be extremely careful while considering the data.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

There is always the room for improvements.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

They must more rely on facts and scientific investigations.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

They must be less influenced by press and politicians, must be more independent.

11. Any other comments

The phenomenon is of global character, therefore needs global decisions. Our earth is in danger, the global development may become instable, some processes may become irreversible, not sustainable.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead author, contributing author, convening lead author. Also convening lead author of a Special Report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

IPCC assessment reports do not cover the entire literature. For instance, the IPCC does not fully assess the literature on trade-offs between the various greenhouse gases and the literature on

international environmental treaties. Both areas are actively researched and conclusions are typically critical of current policy, but were largely omitted from previous IPCC reports. The literature on comparing the impacts of climate change to the costs of emission reduction falls outside WG2 and WG3, and thus outside the Synthesis Report as well. There is a risk that the nascent literature on ex-post evaluations of climate policy (in Europe and Japan) will be ignored in AR5, and particularly those papers that show that climate policy is ineffective and needlessly expensive.

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

b, c. The most important problem of the IPCC is the nomination and selection of authors and Bureau Members. Some experts are included or excluded because of their political allegiance rather than their academic quality. Sometimes, the “right” authors are put in key positions with generous government grants to support their IPCC work, while the “wrong” authors are sidelined to draft irrelevant chapters and sections without any support.

AR5 should be put on hold until the IPCC can prove that its author teams indeed have the relevant expertise, and its authors are at least as qualified as their peers. If needed, the IPCC should request additional nominations.

The selection process for authors and Bureau Members should be made transparent. The IPCC should commission a scientometric assessment of its Bureau Members, authors, and chapters.

2d. Writing of working group reports

2e. Review processes

In contrast to the procedures for governing the IPCC and selecting its authors and officials, the procedures for drafting IPCC reports are acceptable on paper but not in practice. Particularly, these procedures were not enforced in AR4 WG2 and WG3.5 In order to avoid repetition, Review Editors should be more independent, and return chapters for further revision if needed. The Review Editors rather than the Convening Lead Authors should have the final say about chapters. Review Editors should actively seek the input of referees. Review Editors should have the right to reject sections of the report that do not meet basic quality standards at the deadline. In short, Review Editors should have the same powers as journal editors. Review Editors should be selected from the ranks of (former) journal editors.

The IPCC should engage the wider public in the review process. After the publication of AR4, the “blogosphere” uncovered a large number of procedural and substantial errors. It would be preferable to discover this before publication. Engaging with “the public” is difficult. Therefore, the IPCC should do this in an experimental fashion in AR5 so as to prepare guidelines for AR6. Experiments could include posting draft chapters on blogs for public comment,⁶ and posting draft chapters on wikis for public amendment.

5 Some chapters rely heavily on gray literature while ignoring peer-reviewed literature on the same matter (e.g., Ch 7 WG2). Other chapters cite papers published after the deadline (e.g., Ch 15 WG2). Incomplete drafts were sent for peer-review (e.g., Ch 11 WG3). Substantial material was added after the final review (e.g., Ch 20 WG2).

6 A draft of the current statement was discussed at <http://rogerpielkejr.blogspot.com/2010/05/richard-tols-draft-submission-to-iac.html>

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

The IPCC is a victim of its own success. Policy makers trust the IPCC reports as neutral and authoritative assessments of climate research. Therefore, people with a political agenda have tried to influence the IPCC. Such attempts were largely in vain in AR2 and AR3, but this is not true for AR4. Working Group 2 systematically portrays climate change as a bigger problem than is scientifically acceptable.¹ Working Group 3 systematically portrays climate policy as easier and cheaper than can be responsibly concluded from academic research.² These biases can be found in the chapters, the technical summaries, the summaries for policy makers, and the synthesis report.

1 Examples include the date of disappearance for glaciers in the Himalayas, the mix-up on weather and climate for agriculture in Africa, and the projected number of people at risk from water stress.

2 Examples include the attribution of market-driven and welfare-improving improvements in energy efficiency to climate policy, the omission of the opportunity costs of energy research and development, and the use of gross (rather than net) estimates of job creation.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The IPCC member states are represented by their environment departments. For AR6, this responsibility should be transferred to their research departments or their academies.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The procedures for drafting IPCC reports are acceptable on paper but not in practice. Particularly, these procedures were not enforced in AR4 WG2 and WG3.⁵

5 Some chapters rely heavily on gray literature while ignoring peer-reviewed literature on the same matter (e.g., Ch 7 WG2). Other chapters cite papers published after the deadline (e.g., Ch

15 WG2). Incomplete drafts were sent for peer-review (e.g., Ch 11 WG3). Substantial material was added after the final review (e.g., Ch 20 WG2).

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The IPCC should do away with its pseudo-objective confidence levels. IPCC reports should use formal or empirical matters to assess confidence, or admit that confidence levels are unknown.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The procedures for drafting IPCC reports are acceptable on paper but not in practice. Particularly, these procedures were not enforced in AR4 WG2 and WG3.5

5 Some chapters rely heavily on gray literature while ignoring peer-reviewed literature on the same matter (e.g., Ch 7 WG2). Other chapters cite papers published after the deadline (e.g., Ch 15 WG2). Incomplete drafts were sent for peer-review (e.g., Ch 11 WG3). Substantial material was added after the final review (e.g., Ch 20 WG2).

Errors, once discovered, should be corrected in an erratum on the IPCC website. A committee should be established to deal with this. This committee should be independent of current and past IPCC Chairs, Convening Lead Authors, and Review Editors.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The IPCC Plenary has delegated its supervisory powers to the IPCC Bureau, which is also its executive. This implies that there is no mechanism to correct the IPCC Chair. If, for example, he oversteps his mandate and gives policy advice on behalf of the IPCC, if he says embarrassing things to journalists, or if he uses the IPCC to raise funds for his home institution. There is no mechanism to reconcile differences between IPCC Working Groups on the treatment of interdisciplinary topics. The main example is the IPCC treatment of global warming potentials as a pure physical issue. Therefore, the Chairs of the IPCC and its Working Groups should leave the IPCC Bureau, and the Bureau should adopt a supervisory role under a strong and independent chairperson.

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Some parts of the Synthesis report seem to present an overly simplified account of areas in which knowledge is incomplete, or there is ongoing debate about the interpretation of observations. See the next box. In most areas, the underlying process of review appears sound to an uninvolved observer.

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

Several recent observational studies that do not confirm predictions made by the IPCC suggest that these extrapolations may have been made in the belief or hope that future data would be confirmatory. Without implying scientific misconduct on the part of IPCC members, this sort of thinking plays a part in many cases of scientific misconduct in my opinion.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I do not think I have sufficient knowledge of this aspect to comment.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Comprehensive reviews are a difficult task in almost any field. I hope that the nature of the IPCC review process avoids the problem that reviewing scientific models that are not consistent with the dominant paradigm is often an unrewarding task.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Again this is a common problem. Uncertainty does not endear the author to policymakers and tends not to satisfy the general public. Clear recommendations are pushed forward, perhaps too readily, and the qualifications are left to languish in the background.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I think the difficulties with unconfirmed predictions mentioned in response to question 3 indicate that these processes have sometimes not been pursued with sufficient rigor.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I think there have definitely been occasions when IPCC representatives have edged toward the catastrophic in public pronouncements.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

It is difficult for someone uninvolved in the process to present a sensible alternative. My impression is that the current problems arise not from the overall assessment model, but from some of the people who are involved.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Again, my knowledge of these aspects is insufficient to comment.

11. Any other comments

Opening the discussion in this way is a positive step in my view. Governments and interest groups often want answers before they can be presented with confidence. It is not an easy task to demur in these circumstances.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Reviewer. Also lead author of a Special Report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

scarse involvement of scientific groups (governments decide)

2c. Selection of lead authors

selection of lead authors in the hands of governments and scientists that have been involved in the negotiating process as negotiators are preferred.

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I think governments play a (too much) significant role. Governments decide the IPCC national focal point (who has a significant role in involving the scientists he wants), governments decide the candidatures to be sent to the IPCC, and they have a role in the definition of bureau and other structures and committees of the IPCC: they can use their political strenght, as in any other international body.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

An improvement on the sources could arise from the integration of literature published in non-English journals, magazines, books, etc. Important to capture local, specific data and information (related to impacts, mitigation, adaptation, case studies, etc.). I would be cautious to non-peer-reviewed literature

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I think most of the errors and lack of QA/QC is due to time pressure. So far the way errors have been handled was amateur-like.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I think the IPCC was good in communicating with the media and general public the IPCC FAR (also helped by the momentum). IPCC should have responded more quickly and effectively to errors in and hacked researcher e-mails. Other scientific community reacted much better (see AAAS).

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

In the secretariat should be involved more expert people, especially for the aspects of communications and information (use of social network, education to students, etc.)

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None. I've spoken in 29 countries, many of them many times and has expressed critique about the fact that the UN climate change conferences and IPCC build up to those mention almost nothing about the largest creation of our species and the fact that the differences in impacts of them due to design and layout are extreme. Why not study that?!

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

A what ever your scoping procedure is it's missing cities.

2b. Election of Bureau, including Working Group chairs

- 2c. Selection of lead authors*
- 2d. Writing of working group reports*
- 2e. Review processes*
- 2f. Preparation of the Synthesis report, including the Summary for Policy Makers*
- 2g. Adoption of report by the IPCC plenary*
- 2h. Preparation of any special reports*

I have no complaints with b. through h. other than to wonder why you seem to be selecting no one able to assess impacts of cities' various designs and basic components and their relationship to climate change.

3. What is your opinion on the way in which the full range of scientific views is handled?

Not bad except for that glaring exception.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

They write the incentives packages through policy that could support analysis of city impacts and help move experiments in city building forward, but are not. It would be nice if the IPCC, realizing this, would encourage them to stop building for cars and start designing for people.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Comprehensiveness is useless if it includes lots of irrelevant or data of marginal or misleading nature. You don't want "everything" covered. You want to get a sense of proportions and prioritize. Then proceed to collect the most important data. You've been doing great in terms of studying what's happening in the environment but very poor in terms of examining the human-built environment and getting to the basic principles there such that you could judge proportions and prioritize for best results.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I'm not familiar with the details here.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Regarding what you do handle, looks good. But you seem to be missing the, as they say, the elephant in the room.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Missing the place where most of us live, your communications may seem on some intuitive level misguided, irrelevant to daily life in the traffic jams or stuck in the slums. I think though that so many have cars and burn massive quantities of fuels to function in the destructively laid out city they have a deep aversion to noticing they are the cause of the Gulf Oil Spill even more than BP since they are the users and BP just the pusher. They don't want to face it, but nonetheless I hope they would feel relieved if the IPCC faced that truth.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Only what I said above: deal with the human-built environment. If you want further specifics do get back in touch with me. We have the principles and many powerful tool ready and waiting for application. Most people feel guilty about what we say since we are a bit disturbing in placing responsibility on almost all of us - no easy out. But a much healthier and eventually happier world if people would face what we urge facing.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Yes - how can I get through to you? My past letters to leaders in the climate change solutions movement have been roundly ignored, though I did get Stephen Schneider to make a speech (and a very good one too, naturally) in 2008. By getting through to you I'm wondering how to not adjust hour process but how to introduce content, content regarding the source of the lion's share of the problem.

11. Any other comments

You invited my comments. I'd like to invite your response!

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Coordinating lead author, contributor (technical summary, summary for policy makers)

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

The scoping exercise is a difficult activity to undertake, canvassing a range of expert views across just a few days. The approach taken in Venice, I believe, was transparent, open, and productive, in the sense that combinations of chapters, combinations of themes were created that arose from the discussions, and would not immediately have known in advance. The process that lead to these outcomes in the design of the chapters was good and reflected the discussions and

and knowledge within the group of invited experts.

2b. Election of Bureau, including Working Group chairs

I do not have knowledge of this process and cannot comment.

2c. Selection of lead authors

The nomination process is transparent, allowing for both self nomination, nomination by interested parties and international programs, and through invitation. In each case I was selected through nominations and support of my Government, but I understand that the basis is merit and representativeness.

2d. Writing of working group reports

A very fertile and thorough process of creating a document that reflected the assessment of the literature. The literature is not clear cut on all matters and so there is some interpretation on some matters, but in terms of synthesizing the publications across publications, assessing the known time series of heat content of the oceans and related time series this report is indeed thorough. The conclusions in IPCC are drawn from repeatable published literature and observations and is therefore a consolidation of the known science. A difficult, but enjoyable process that is strongly collaborative and cross-disciplinary.

2e. Review processes

There is no equal to the review process in the scientific literature. Four reviews of the each chapter by both scientific and government representatives (often scientists) is an exhaustive process. Each response to every comment was recorded and is available for scrutiny by people outside the IPCC working groups, and there are two review editors who joined each chapter team, to ensure that the comments were taken seriously and correctly. The level of transparency in the review process, is an exemplar relative to the traditional scientific literature (where referees are anonymous and frequently just two reviewers, rather than 10-100 independent reviewers. Each review round consisted of ~1000 comments, and so by the end of the fourth review about 4000 comments will have been addressed by many many reviewers. The level of scrutiny of each chapter makes the review process onerous but also exceeding thorough, and remarkably ensures very few errors occur.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

The preparation of the summary of policymakers is a also a remarkable process, needing a careful and thorough Chairperson, to mix both the science and the policy issues for the policy makers. I personally believe that the input from the governments at the final plenary session improves the summary, and indeed leads the inclusion of additional science and incredibly figures. The Summary for Policy makers in WG1 was the better for the 4 days of intense discussion. There is potential in this process for the summary to be diluted or truncated, because of the nature of the consensual approach to the line by line analysis. When successful, it is

successful, when unsuccessful, it clearly can be damaging. The balance between policy and what must always be supported by the underlying assessment is critical and can be a fine line.

2g. Adoption of report by the IPCC plenary

See comments above

2h. Preparation of any special reports

Can't really comment, having not been part of those processes....

3. What is your opinion on the way in which the full range of scientific views is handled?

I felt the full range of scientific view was handled, and IPCC has a very good culture of expressing the uncertainty and range of problems withing the literature. The report after all can only reflect the scientific literature as it stands at that time, and it is my belief that the report does precisely that.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

I never felt that the governments interfered in the process, except by some countries, at some lines of the summary for policy makers. These were in every case "solved" adequately. The integrity of the science was maintained throughout the final plenary session. For this working group (WG1) the hand of governments almost never appeared at anytime.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The occasional use of non-peer reviewed literature can be used, eg reports that report the last one or two years of state of the climate, but these reports should have previously been published for earlier versions of the data in the peer reviewed literature. That is to say non-peer reviewed literature should only be used where there is very similar publications in the peer reviewed literature already existing establishing the longer time series in the main scientific literature. There are some aspects, eg model outputs, or climate services that publish data (that are updated to the present moment) that could be used, so long as they have been already described in the literature (and so are close derivatives of pre-existing per reviewed literature)

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

In WG1 report the characteristaion of uncertainty was well done in the main, and where practicable. It is my belief that the WG1 gave more effort to question of uncertainty than the normal literature and applied the approaches to uncertainty evenly and methodically across chapters. There were occasions where appropriate quantitative models didn't exist (eg rapid ice

dynamics or methane re-release) where quantification is actually impossible, and in these cases a risk approach would be preferable. I cannot comment on the synthesis report, or on Wg2 and WG3.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

This is a chapter by chapter process, depends on the particular state variable. Consequently I can only make general comments but in WG1 the issues of data and data quality were taken very seriously, and was frequently the discussion of the areas of weakness. Similar issues lie in around numerical models. Climate data can be complex, in terms of biases and temporal changes in the performance of instruments used to measure the state of the climate. My belief is that in general this process is thorough, more thorough than the typical scientific literature. Mistakes found after publication are difficult for IPCC to actually correct, but as I understand it addendum and media releases are undertaken. It may be that a live version of the assessment report could be maintained which is adjusted with new information around data and evidence.... So to some extent other organisations take on this role. The IPCC reports are of course assessments up to the moment, and it is not widely appreciated in the community that the science and data sets are not static, but may be this isn't fully appreciated in the wider community.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The IPCC communicates through its reports, and through its engagements with governments, and government representatives. These are the key stakeholders. The general public are important, and my belief is that there is room for better communication to the public, but in reality, the most important communication is to government and politicians. Communication is a difficult issue intrinsically. IPCC is not stranger to controversy, there are many stories of where process has been scrutinized in detail and found to not be perfect. The perfection is unachievable, IPCC has created a plan, delivered the reports, and those reports have continued to withstand the scrutiny they receive remarkably well, which illustrates that the process has been robust.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Alternative are hard to imagine. It would clearly be useful to have more frequent updates of the main reports, it would be better to have more established climate services that support the assessments from IPCC, and provide the underlying support the analysis of IPCC conclusions that are available to all sectors and communities. So this really means a transparency in data sets and products that form the basis of the much of the information that is input to the IPCC reports. The need for these type of reports will not go away, because of the importance of the underlying issue, and their long term consequences. Better underlying information and climate services that have high credibility through scientific review, and scientific development would perhaps reduce ambiguity in what is presented to the public.

10. Do you have any suggestions for improvements in the IPCC management, secretariat,

and/or funding structure to support an assessment of this scale?

No suggestions....I do not have enough knowledge...

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead Author, IPCC Bureau member

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

The whole process, all steps above, are flawed by an excessive concern for geographical balance. All decisions are political before being scientific.

Topics in the scoping meetings or lead authors are selected with little preoccupation for the quality of the IPCC assessment report.

The first criterion is geographical balance and involvement of DCs. And attention for research topics which are relevant for DCs (particularly in WG II and III)

There is almost no discussion on the quality of authors or chapters.

3. What is your opinion on the way in which the full range of scientific views is handled?

The IPCC process is very open and different views are accounted for. The problem is not the representation of several different views but the capacity and willingness to choose between different views using objective and scientifically sound criteria.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

There is an excessive influence of government in all steps of the IPCC process. For example, meetings of the Bureau are attended also by representatives of governments, who have the right to intervene, and actually intervene much more than bureau members. This distorts discussions

and moves discussions away from scientific arguments.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

This is a critical matter. The pressure from DCs to use publications in DCs and/or grey literature is high and effective. This lowers the scientific quality of the report. IPCC reports should be based only on publications in high quality peer reviewed journals.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

There are continuous improvements. Generally the report does a good job. What is miserable is how uncertainty is treated in the summary for policymakers.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Quality control is poor, in particular for publications and data from DCs. IPCC should promote more cooperation between scientists in different regions of the world, e.g. by funding long stays of scientist from DCs in good universities.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Communication tends to be catastrophic and is centered on the IPCC chairman. Therefore it crucially depends on the personality of the IPCC chairman. Presently, Pachauri is not doing a good job.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The IPCC assessment model is unlikely to be sustainable. It's fully voluntary. Top scientists tend to be discouraged. Even TSUs exist only because a few governments volunteer to pay for them. I am more in favour of a non political organization, an agency with a high quality permanent staff.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

IPCC is a tiny organization with about 6 employees. Too small to handle a big problem like climate change. In addition, chairman and secretary should be changed asap. They proved to be totally inadequate.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

I personally think that the strengths of the steps are ok for now. I have not observed any major weaknesses.

Recommendations:

1. Focal Points should be involved in the IPCC assessment processes.
2. Focal Points should be given the opportunity to form part of the review processes.

3. What is your opinion on the way in which the full range of scientific views is handled?

Good

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The role of governments in the entire process through their focal points is very limited.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

This aspect needs improvement, especially regarding the non-peer-reviewed/grey literature.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I have no suggestions because this aspect is being handled properly in all IPCC reports.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I think the way in which the IPCC handles data quality assurance and quality control and identification and rectification of errors before and after publication is good.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I think the way in which IPCC communicates with the media and general public is good, but needs to be improved by doing so on a regular basis, may be, monthly or quarterly, not only when the media and general public raise issues on a particular matter.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I have no suggestions for alternative process. Member States and the donor community should continue to make their contributions to the organization for its sustainability.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

I have no suggestions because I feel that the IPCC is well structured and managed for now.

11. Any other comments

Focal points should be given opportunity to participate in IPCC workshops so as to equip them to participate in the assessment processes.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Contributing Author, Coordinating Lead Author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

All comments below are based on my experience with WG1. I have no experience concerning the processes in WG2 and WG3.

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

Authors are selected by the respective WG Bureau on the basis of proposals by the nations. In this selection process the national and gender balances play an important role. This may not be optimal under all circumstances, but I think this is still the best way to determine the team of authors.

2d. Writing of working group reports

I have no suggestions for changing the way the WG1 Report is written. For WG1, the current process is perfect.

2e. Review processes

The review process is extensive. Because of the open nature of the process, a substantial part of the comments is not very helpful (but still has to be responded to). My impression from the comments in AR4 was that reviewers were picking their special topics and usually comment on a few paragraphs of a chapter only, and a broader review of the entire chapter is often not performed. I therefore suggest that the review process should include also solicited reviews of selected eminent scientists who are asked to look at the consistency of an entire chapter and its relation to other chapters (also from other WGs).

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

To my mind, the adoption of the SPM by the IPCC Plenary (the various nations) is important. This introduces an “ownership” of the report for all participating nations and makes it harder for the policy makers to ignore the report.

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

This is not a problem for WG1, in which scientific facts published in reviewed journals are assessed. The full range of scientific results is reported in this assessment.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments submit proposals for the author team, and they adopt the SPM. That is all they should do.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

In WG1 only reviewed literature is used. Non-peer-reviewed sources are usually data reports.

These have to be judged by the author teams concerning their quality.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

In WG1, uncertainty is treated according to accepted scientific standards. Therefore, I have no suggestions for improvement. In WG2 and WG3 this discussion is more difficult.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Data quality assurance and quality control is a task both of the reviewers of the journals, where the literature is published, and of the lead authors of the IPCC Report. In WG1 this is handled well, including the identification and rectification of errors. For IPCC in general this can definitely be improved.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The communication leaves much room for improvement. The bureau is not staffed to do this effectively.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

No. The IPCC Assessment provides an invaluable source of information for policy makers and the general public. Other parts of society/environment would profit a lot from such an assessment, e.g. biodiversity, and especially the world economy.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

It seems that the IPCC needs a set of optimised statutes, which determine the tasks of the Chair, the WG Co-Chairs and the Bureau and their relation and responsibilities more effectively.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Government focal point, Head of delegation to IPCC plenary meetings, Government Representative in Bureau meetings. Also expert reviewer for a special report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

It is a strength of the IPCC assessment process that there are dedicated scoping meetings with scientists coming from a range of nominations from Governments and with participation also from Government representatives. These scoping meetings produce the draft structures of the assessment reports, including the Synthesis Report. They are then discussed and adopted by the IPCC Plenary. This procedure ensures that the perspective of policymakers is taken into account through participation of government representatives and through the adoption by the IPCC Panel, constituted by government representatives. This also ensures that the structure is drafted by scientists from a wide range of regions and expertise, ensuring representation from both developed and developing country perspectives. Thus, in the end, the scoping process leads to a product – outlines of AR, including topics/questions to be addressed by SYR – that has ownership both from science and from policy.

For TAR, a process of defining policy questions for the SYR through agreeing them in the UNFCCC process was a difficult process which in the end led to complicated and convoluted questions. Nevertheless, I consider such a process of a discussing among policy makers/government representatives about what the policy relevant questions are that in particular the Synthesis Report should answer as very useful. It is a positive development that the scoping of the SYR has started right away at the onset of the scoping process of the outline of the AR5 reports.

2b. Election of Bureau, including Working Group chairs

An important strength of the process is that representations from all WMO regions is ensured thus ensuring broad geographical representation. It is also important that the procedures call for scientific expertise being critical for the election of bureau members, who are elected in their personal capacity and not as government representatives. A weakness is the definition of the groups, as these are historically defined based on WMO considerations, and are not the same as e.g. the UNFCCC groups. This has been identified earlier and might be addressed at some point.

2c. Selection of lead authors

It is a strength of the process that the scientific bureau members, not the government representatives, select the lead authors. It is good to have a discussion about the result of this selection with government representatives, which happens when the working group bureaux present this selection to the Bureau, where also government representatives from the bureau members are present. The working group bureaux can react to questions but ultimately it is in their responsibility to select authors according to scientific excellence. It is important that also geographical balance is taken into account, as this ensures broad buying in from all governments to the reports from the moment of preparing them, not only as those consuming their final products. It has been a problem from the beginning that not enough qualified scientists from developing countries can be nominated, but this is a problem that can only be solved through ensuring that this scientific research in developing countries in the field of climate change is strengthened. In my experience, the bureaux have taken very much care of holding up scientific expertise as requirement for selection as Lead authors. It is important that working group co-

chairs and bureaux do not get pressure from governments regarding excluding scientists because they might be too critical or in any other way “difficult” from some government’s perspective.

In terms of possible areas of improvement, consistency across WGs could be addressed and possibly improved regarding methods and criteria for selection, and make process more transparent, informing the public about criteria used. This has already been addressed in the present cycle.

It is important to also take into account social skills for the election of authors.

2d. Writing of working group reports

CLAs and LA have a critical role and need to be fully active. LAs and CLAs who do not contribute should be replaced. The critical responsibility of CLA and LAs in ensuring quality control should be further strengthened by e.g. training new CLAs and LAs. Communication and team skills are important and should be taken into account in the selection (see above).

IPCC could impose stricter page limits to condense assessment reports.

Cross-Working group cooperation and treatment of crosscutting themes is important. This has been addressed increasingly, but also weaknesses identified in the discussions in IPCC plenaries. Improvements are being planned based on past experience. This is an important element of the AR5 – but also shows how the IPCC has, in the past, always addressed lessons learned from past assessment and tried to address it for the future.

2e. Review processes

I find the thorough and transparent review process – first expert, then government and expert, including final distribution and commenting of the SPM – a very important strength of the IPCC assessment process, which should be kept, even if it is cumbersome and slows down the assessment process. It is also important to keep and even strengthen the role of the Review Editors and to document the way comments have been handled. It could be a good idea to deal with the comments anonymously, that is, that authors have to deal with comments regardless where they come from, so that the content is addressed, not the source. Transparency and accountability are critical in the review process. More RE might be needed – already implemented at least for WG II in AR5. RE might need better guidance for their role. Cross chapter and cross-working group reviews could enhance and strengthen quality control and achieve greater consistency of reports.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

It is helpful to prepare the scoping of the Synthesis report in time, that is right at the beginning of the cycle, as is being done for AR5. This was a lesson drawn from earlier SYR, which were prepared rather late. An advantage of preparing the scoping early is that the working group reports can already from the beginning take into account the crosscutting policy relevant questions to be addressed by the SYR.

2g. Adoption of report by the IPCC plenary

It is a fundamental strength of the overall IPCC assessment process that government representatives are not only involved in reviewing the report but ultimately adopt the SPM line by line and approve the whole report. This ensures buying in and acceptance by the governments – no government of member countries from the IPCC can just ignore an IPCC report. These reports would not be as relevant as they are for climate policy without this important key feature of the process. It has been discussed extensively by the IPCC whether to change it, as this process is very time consuming and does not necessarily lead to more readable SPMs, but the benefits massively outweigh any problems like this.

2h. Preparation of any special reports

These have mostly been prepared on request by the UNFCCC and have been critical for the discussion of relevant issues in the UNFCCC process, e.g. regarding treatment of LULUCF. SR can complement full assessment reports but not replace them. Full assessment reports continue to be the backbone of comprehensive and excellent scientific assessments.

3. What is your opinion on the way in which the full range of scientific views is handled?

The selection of a wide range of expertise covered by the lead authors and contributing authors, as well as the broad range of experts involved in the review process, that can bring additional viewpoints expressed in scientific publications to the knowledge of the lead authors.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The intergovernmental nature – expressed in the clear roles that scientists and governments have in the production, review and adoption of reports, is the most essential and unique feature of the IPCC and the most important strength of it. This should be kept by any means. This is so successful, that many governments, like mine, support similar institutions for other policy fields, e.g. biodiversity – it was a big success to decide on the IPBS using the IPCC as a model. The way the roles are clearly defined ensures that government representatives cannot just change the scientific assessment. This is ensured in particular when strong Co-chairs ensure that no change in the SPM can be agreed against the will of the coordinating lead authors who are present at the plenaries.

In addition, the UNFCCC is the main customer or client of the IPCC – e.g. many SR and other dedicated products have been produced at the request from UNFCCC. IPCC reports have been critical in the UNFCCC process – adopting the UNFCCC in the first place, negotiating the KP and negotiating the Bali Mandate and the Copenhagen Accord.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Clear rules regarding use of non peer-reviewed literature have been developed by the IPCC, because it was always clear that they cannot be left out completely, even though primarily peer reviewed literature should be used. It is important to familiarize any new IPCC authors with these rules and review their application regularly. In the end, it is the responsibility of the lead authors to check the quality of the non-peer reviewed literature and thus review it. This responsibility has to be taken very seriously. An independent review of the past/present practices regarding implementing the adopted procedures in this regard will be very useful. The source of the non-peer reviewed literature should not be used to qualify or classify/categorise it, rather the content and quality should be the only criterion.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

This issue has been taken very seriously by the IPCC and discussed in many meetings of the plenary. This discussion needs to continue, working on further improving consistency in handling uncertainty. A weakness we see in the process so far is that the assessment of risks at global, regional and local levels and the treatment of implications of uncertainty for risk assessment has not been addressed in particular at the level of SPM. For example results with high impact but low probability can be very policy relevant, even with high uncertainty attached.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Quality assurance and control lies in the responsibility of the CLAs, LAs and RE – see above (need to train authors and ensure that they know the standards and procedures).

A process for clear decision making structures dealing with identification and rectification of errors that still can happen needs to be developed. This has already been started by the bureau, distinguishing between easily addressable potential errors and those that need further investigation, possibly involving other, third, scientists. Communication needs to be dealt with clearly in this process – quick reaction and communication about how any potential error identified is being investigated. However, it is important to distinguish between real errors and the process of continuous scientific progress that leads to a constant reassessment of the whole literature basis – this is why we need new assessment reports every few years. Therefore, a clear definition of what constitutes a real error is needed and a clear communication strategy on responding to perceived and real errors.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

This is clearly a weakness that has been identified in the past and has been apparent with the communication crisis at the beginning of the year, where the IPCC clearly was not able to respond adequately and timely to the many alleged so called errors that were published in the press. Professional communication management in the IPCC secretariat is needed, and very clear decision making structures and communication structures within IPCC – including with and

between working group co-chairs/TSUs are important and need to be strengthened. Probably more resources but also clearer decision making and management structures are needed in the Secretariat for this.

Professional training in communication of all involved is also important, to strengthen consistency in communication. In all this, it is important to keep the nature of being policy relevant but not policy prescriptive. That is, on substance, stick to the key messages of the IPCC products, do not invent other/new messages.

IPCC needs to better communicate how it works – it is a very transparently working organization, but still there are many misunderstanding about how it works because not much effort has been put in the past on how to communicate it. At present, steps are being taken to improve this, including developing a comprehensive communication strategy, but it needs more effort and probably more resources.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

IN short – it is a very good model, in particular the intergovernmental nature, involving science and policy needs to be kept – it is a model that is being copied for other areas – now recently on Biodiversity.

It is a very successful model that should be kept.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Management of the Secretariat and management of the overall governance including interlinkages between secretariat and TSUs and IPCC Chair and WG co-chairs needs to be reviewed as this seems to be appoint of weakness. Structures like the e-team have been established in the AR5 cycle, and cooperation between wgs has improved a lot, but this needs to be more transparently managed.

It is important to have a healthy balance between a clear central voice – Chair/Secretariat – and the decentralized elements in the WGs. A tendency towards stronger decentralization would be dangerous, as we would lose the overarching aspects of the IPCC and its perception in the public and in policymaking. As most policy questions are crosscutting, it is important to have this overarching element reflected in management and leadership structures.

Possibly, the funding structure needs to be reviewed – do we need a more reliable funding?

IPCC could develop additional rules and procedures to define the role of the Bureaus and Chairs vis a vis the chair. The role of the Eteam should be institutionalized.

Rules/codes of conduct could be developed to guarantee impartiality and integrity and deal with this transparently.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Expert reviewer

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

I take it you mean IPCC operational policies, since the IPCC is supposed to be neutral with respect to government policy. IPCC policies are frequently referred to by people who want to appeal to the authority of the IPCC documents. In particular, the claim that the IPCC review process is “objective, open and transparent”¹ is sometimes cited as grounds for treating the assessments as authoritative to the point of near-infallibility. But my experience is that the written policies of the IPCC are not always followed, and there do not appear to be any consequences when they are breached.

For example, in Annex I of the IPCC procedures,² Review Editor responsibilities include the following: “Review Editors will need to ensure that where significant differences of opinion on scientific issues remain, such differences are described in an annex to the Report.” I was involved in areas where there were significant differences of opinion on scientific issues, particularly with respect to peer-reviewed evidence of contamination of surface climate data, improper estimation of trend uncertainties and methodological flaws in the hockey stick graph highlighted by the IPCC in the TAR. None of these differences were resolved during the review process, yet no such Annexes appeared, creating a false impression of consensus.

After the publication of the AR4 I found that important text had been altered or deleted after the close of the review process, and the Lead Authors of Chapter 3 had fabricated evidence on page 244 of the WGI report, by introducing a claim that statistical evidence of surface data contamination in two published, peer-reviewed articles was statistically insignificant, when the articles show no such thing. The paragraph was inserted after the close of peer review and was never subject to external scrutiny. That Lead Authors are able to insert evidence and rewrite the text after the close of review makes a mockery of the idea that the IPCC reports are peer-reviewed, and undermines the claim that they contain the consensus of experts. Consequently I believe that the policies governing IPCC operations are inadequate to ensure reliable conclusions. I will make some recommendations for change in subsequent sections.

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

These steps appear to be under the control of a small circle of people committed to a

predetermined view on global warming. The controlled selection of Lead Authors, in combination with the fact that the review process is toothless, guarantees that the report contents are predictable given the names of the Lead Authors. Indeed there is not much point even publishing the report any more: once the list of Lead Authors is known, we can all guess what the conclusions will be. I am sure that there are many areas in the IPCC report where the conclusions will be sound. But in the areas where I have detailed knowledge and experience, it has not been the case.

One example of this problem was the selection of Michael Mann as Lead Author of the TAR paleoclimate chapter. It is obvious that there were many experienced experts who would have been more obvious choices, whereas Mann was a new Ph.D. with one prominent study in the area, namely the hockey stick graph.³ His 2 papers on the hockey stick proposed a major revision to a view that many experts, including the IPCC itself, had held in the 1990s, concerning the relative magnitude of the Medieval Warm Period. But the study and its methods were brand new and had not been subject to any real scrutiny, nor would they be until Steve McIntyre began trying to replicate them in 2003. It is difficult to explain Mann's promotion to Lead Authorship based on his experience or professional status at the time of the TAR, but it does make sense if we take the view that the IPCC looks for individuals it believes will be able to articulate a narrative they want to see promoted.

Furthermore, now that this process has been in place for about 15 years, a feedback loop has emerged in which scientists who serve as Lead Authors for the IPCC gain prominence in their fields, thereafter exerting greater influence on the journal publication process, thereby smoothing the path to publication of studies that reinforce the IPCC view, and blocking the publication of studies that do not. These kinds of issues came out with disturbing clarity in the CRU emails, and have been discussed anecdotally for many years. The IPCC is no longer a neutral observer of research, it now affects and distorts the flow of research itself.

2d. Writing of working group reports

A major problem with the IPCC is that the assignments for Lead Authors (LA's) often put them in the position of reviewing not only their own work, but also that of their critics. There is too much conflict of interest built into the report-writing process, and what few safeguards are in place are ineffective.

An important example concerns the question of surface climate data quality. Chapter 3 of the AR4 covers the measurement of observed climate change. A key data set for this purpose is produced by the Climatic Research Unit (CRU) at the University of East Anglia. The CRU publishes a gridded climate data set called TS 2.x that they specifically warn is unsuitable for IPCC work because it is contaminated by the effects of urbanization and land-use change. They also publish the CRUTEM data under the leadership of Phil Jones, which they claim is filtered in such a way as to remove the contaminating influences, revealing an accurate climate signal. I and others have published studies testing this claim and finding evidence against it. If the claim is wrong, this would have serious repercussions not only for estimating the magnitude of post-1980 climate warming but also for attributing the observed changes to greenhouse gases.

Unfortunately the IPCC appointed Jones to write the chapter that assessed the question of CRU data quality, creating a conflict of interest at the heart of one of the most important discussions. It was clear to me as a reviewer that Jones (and the other LA's) were disinclined to give this literature a proper review in the IPCC report, since they kept any mention of the studies that refuted their claims out of the drafts that were seen by reviewers. I objected to this, as did at least one other reviewer, but the Second draft was likewise silent on the issue. Then, after the review period closed, they inserted some unsubstantiated statements claiming that my and others' findings against the CRU data were statistically insignificant. As a result of the CRU email leak we now know this was a premeditated strategy. On July 8 2004, a year before the first IPCC draft was produced, Jones wrote to Michael Mann regarding my first paper on the temperature data problem (which he denotes as 'MM')

The other paper by MM is just garbage - as you knew. De Freitas again. Pielke is also losing all credibility as well by replying to the mad Finn as well - frequently as I see it. I can't see either of these papers being in the next IPCC report. Kevin and I will keep them out somehow - even if we have to redefine what the peer-review literature is!

Cheers

Phil

By contrast, in the two paragraphs immediately prior to the above quotation, Jones discusses some results by a colleague named Adrian Simmonds that appeared to rebut earlier work of Eugenia Kalnay and Ming Cai, who had shown that much of the measured warming over the US portion of the CRU data was attributable to land-use change, thus adding to the evidence against Jones' position. Jones pushed for publication of the Simmonds paper with the intent to use it in the IPCC chapter he was writing.

It may be the case, in principle, that Jones' judgment on both papers was correct (though I don't think it was). But the problem is that because Jones was acting in a conflict of interest, his decision as IPCC LA to exclude this evidence, and later to misrepresent it, cannot be taken at face value as simply an expert judgment.

Another example concerns the treatment of the conflicting evidence about tree ring climate reconstructions at the time of the TAR. As noted above, the IPCC made an odd selection by choosing Michael Mann to write the chapter, since he was new to the field and had only just recently obtained his Ph.D. At that point there were three studies presenting hemispheric mean temperature histories back to the Medieval era. One was by Mann, and the others were by, respectively, Briffa (which would appear in print in 2000) and Phil Jones et al. Not all the studies, and indeed not all the studies' authors, supported the view that the 1990s could be ranked as the warmest decade of the millennium. In principle that should not be viewed as a problem. The task of the IPCC is to summarize the science, and if the science is uncertain then that is what the summary should say. It would only be considered a problem if an author wanted to make it appear that all the evidence confirmed his own results.

The study that departed the most from his own results was the Briffa series. Briffa was unpersuaded by Mann's reconstruction, as evidenced an email of his on September 22 1999.

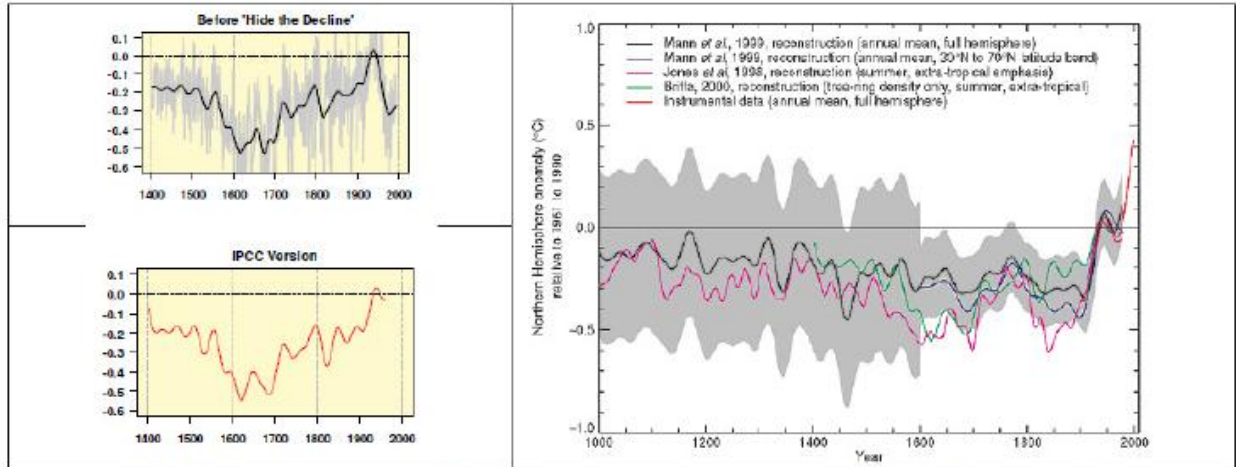
I do believe , that it should not be taken as read that Mike's series (or Jone's et al. for that matter) is THE CORRECT ONE. I prefer a Figure that shows a multitude of reconstructions... For the record, I do believe that the proxy data do show unusually warm conditions in recent decades. I am not sure that this unusual warming is so clear in the summer responsive data. I believe that the recent warmth was probably matched about 1000 years ago. I do not believe that global mean annual temperatures have simply cooled progressively over thousands of years as Mike appears to and I contend that that there is strong evidence for major changes in climate over the Holocene (not Milankovich) that require explanation and that could represent part of the current or future background variability of our climate.

Briffa's study departed from Mann's in showing relatively large natural variability over the previous centuries, and in showing a conspicuous decline in temperature in the last few decades. This apparently posed a problem for Mann, as he explained in a remarkable email the same day.

I would be happy to add Keith's series. That having been said, it does raise a conundrum: We demonstrate (through comparing an exatropical averaging of our nothern hemisphere patterns with Phil's more extratropical series) that the major discrepancies between Phil's and our series can be explained in terms of spatial sampling/latitudinal emphasis (seasonality seems to be secondary here, but probably explains much of the residual differences). But that explanation certainly can't rectify why Keith's series, which has similar seasonality*and* latitudinal emphasis to Phil's series, differs in large part in exactly the opposite direction that Phil's does from ours. This is the problem we all picked up on (everyone in the room at IPCC was in agreement that this was a problem and a potential distraction/detracton from the reasonably consensus viewpoint we'd like to show w/ the Jones et al and Mann et al series.

Here again the problem is not that experts are assessing evidence and making judgments. The problem is that a Lead Author who is in a conflict of interest has sole discretion to impose a judgment. Mann (and Jones) dealt with Briffa's counterevidence by simply deleting the divergent data. Figure 1, taken from a recent presentation by Stephen McIntyre⁷ at Trinity College, University of Toronto, shows the contrast between the data Briffa supplied by email to Mann, the version after Mann processed it, and the diagram that appeared in the IPCC Report (IPCC 2001).

As is quite clear, the declining post-1960 data was removed. There was no discussion of this in the 2001 IPCC Report. In the 2007 Report the same trick was applied. This time at least one expert reviewer noticed it and objected, but the objections were dismissed.



Top left – Briffa reconstruction re-plotted from data in Climategate email; bottom left – digitized Briffa reconstruction in IPCC 2001 (where it is the green reconstruction.). Right – IPCC Figure 2-21.

I would add one further observation: in all the examples of which I am aware the IPCC authors only seem to be troubled by evidence that supports the positions of people they dismiss as “skeptics.” They do not struggle with evidence that supports their global warming narrative: they simply use it. I am unaware of any examples in which IPCC authors discuss tweaking the evidence to boost a skeptical position. Tweaking only ever seems to be used to undermine a skeptical conclusion.

2e. Review processes

It is not actually a “peer review” process, such as academic journals use, instead it is more like a limited public comment process. No one is assigned the role of reviewing a particular section or chapter. It is conceivable that parts of a report might not be read by any reviewers: there is nothing in the IPCC procedures that prevents this. I will make recommendations later on to remedy this. The number of comments submitted is a good indication of how carefully the report was read.

Although there are over 140 governments in the IPCC, only 22 national governments submitted any review comments on the WGI Second Order Draft (governments did not review the First Order Draft). The European Commission also contributed comments on two chapters, bringing the total to 23 government entities. Of the 2,010 comments submitted, over half were from only two countries: the United States and Australia. Not one African country submitted a comment, nor did any Middle Eastern or Arabic countries, nor did Russia nor the former Soviet states.

Brazil submitted comments on three chapters and Chile commented on one chapter; other than that there were no comments from any South American countries. None of the small island states in the Pacific submitted comments. In eastern Europe, the Czech Republic commented on one chapter, and Hungary commented on three chapters; other than that there were no comments from any government in Eastern Europe.

On the whole, the evidence shows that, except for Australia and the US, government review was cursory or non-existent. Yet the fact that all the member states “accepted” the conclusions is

sometimes invoked as evidence of the report's authority. It is hard to see why the Government Review process even exists, and I will recommend further on that it be removed as part of a larger reform.

As to the expert review process itself, as shown by McLean (fn 8), one of the odd features of the IPCC drafts was the extent to which IPCC authors commented on their own chapters. For example, for WGI Chapter 9, there were 56 contributing authors and 62 reviewers. But of the reviewers, 7 were also authors, three were editors of the IPCC Report, one was an employee of the IPCC Technical Support Unit, and 26 were authors or coauthors of papers discussed in the chapter. Ten of the reviewers advocated on behalf of their own papers in their review comments.

Only 31 reviewers could be identified as truly independent. So there were fewer reviewers than authors. This was the case for 8 of the 11 chapters.

Moreover, of the 62 reviewers, more than half contributed only one or two comments, suggesting they did not even read the whole chapter. This does not necessarily show that a lot of scientists disagree with Chapter 9 or with the IPCC Report as a whole. But it does show that the core of the report received relatively scant review, and there is no indication that large numbers of experts, or governments, studied the material prior to its publication.

My own experience is that the Review Process is ineffective at constraining a Lead Author who is determined to put his or her view forward. An example concerns the statistical issue of Long Term Persistence (LTP). There is a large literature showing that LTP affects climatic data and if it is not properly handled, trend significance is likely to be overstated. After the first IPCC draft I put in expert comments objecting to the simplistic method being used to estimate error bars around the temperature trends. I was apparently not alone, as revealed by a subsequent email from LA David Parker to Phil Jones:

Maybe the biggest problem is Ross McKittrick and David Stephenson's remarks on trends; we used only an AR-1 and they may be correct in advocating a more complex model. Our software for restricted maximum likelihood does not cope with ARMA(1,1) and may have to get John Kennedy to investigate new software using the cited references. This may be a big job but could be done after the LA3 meeting if we agree there what to do. Alternatively – as we have considered already – we could consider not citing linear trends, just overall changes of level from the smooth curves. This would save some space.

The first striking thing about this email is that the IPCC LA's in charge of estimating temperature trends admit they do not have any software that can handle ARMA(1,1), which is one of the simplest time series specifications and is handled by any standard modern statistical package.

This puts an obvious question mark around the idea that the IPCC represents the work of the world's leading experts on all the topics it writes about. The reality is that no one can be an expert on such a large range of topics, and there needs to be better supervision of cases where LA's need outside assistance. I will make a recommendation on this later.

As for the review process, the First Draft of the IPCC report Chapter 3 contained no discussion

of the LTP topic yet made some strong claims about trend significance based on unpublished calculations done at the CRU. I was one of the reviewers who requested insertion of some cautionary text dealing with the statistical issue. Chapter 3 was revised by adding the following paragraph on page 3-9 of the Second Order Draft:

Determining the statistical significance of a trend line in geophysical data is difficult, and many oversimplified techniques will tend to overstate the significance. Zheng and Basher (1999), Cohn and Lins (2005) and others have used time series methods to show that failure to properly treat the pervasive forms of long-term persistence and autocorrelation in trend residuals can make erroneous detection of trends a typical outcome in climatic data analysis.

Similar text was also included in the Chapter 3 Appendix, but was supplemented with a disputatious and incorrect claim that persistence models lacked physical realism. I criticized the addition of that gloss, but other than that there were no second round review comments opposing the insertion of the new text.

Then, after the close of Expert Review, the above paragraph was deleted and does not appear in the published IPCC Report, yet the disputatious text in the Appendix was retained. There was no legitimate basis for deleting cautionary evidence regarding the significance of warming trends.

The science in question was in good quality peer-reviewed journals, the chapter authors had agreed to its inclusion during the review process and there were no reviewer objections to its inclusion. But, evidently, at some point, one or more of the LA's decided they did not want to include it anymore, and the IPCC rules do not prevent arbitrary deletion of material even after it has been inserted as a result of the peer review process. Also, the authors proceeded with an incorrect method of evaluating trend significance, rather than obtaining expert advice. In 2008, a UK citizen named David Holland sought information about how one of the Chapter 6 Review Editors (John Mitchell of the UK Met Office) had handled the controversies over the Mann et al. hockey stick. As part of his inquiries, Holland submitted a Freedom of Information Act request to the Met Office. The documents released in reply contained an email from IPCC Chair Susan Solomon advising Mitchell on the limitations to his responsibilities to provide explanations for editorial decisions. The email was dated March 14, 2008, and stated, in part, the following.

The review editors do not determine the content of the chapters. The authors are responsible for the content of their chapters and responding to comments, not REs. Further explanations, elaboration, or re-interpretations of the comments or the author responses, would not be appropriate.

In practice, RE's have neither the responsibility nor the authority to stop Lead Authors who are determined to make arbitrary decisions about chapter content. For this reason the IPCC review process is fundamentally unlike the academic peer review process, in which the editor has the right to accept or reject a paper and its contents based on review comments. To the extent the IPCC gives Lead Authors the sole right to determine content and accept or dismiss comments, it is more like a weblog than an academic report.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

I chose not to comment on the draft Summary for Policy Makers since I knew it would be subject to complete re-write many months after the close of scientific review in an IPCC plenary session. So it is pointless to put it out for review. As for the Synthesis report, it is produced long after the close of the review of the Assessment Report, and so once again, expert review is pretty pointless.

2g. Adoption of report by the IPCC plenary

As I explained above, most governments did not provide meaningful or rigorous input during the government review phase, so their “acceptance” and “adoption” of the report is not evidence of its soundness. And in practice, elected governments are not bound in their actions by anything in the report. The only purpose that seems to be served by having the report “accepted” is that environment bureaucracies are then relieved of the responsibility of responding to questions from their own citizens or conducting their own assessments of the science, since they can repeatedly defer to the IPCC report as the last word on the subject. I think this ill-serves the public, and stifles legitimate discussion.

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

As should be clear, my experience is that there are formidable mechanisms in the IPCC process that prevent certain points of view from being expressed in the report. The behind-closed-doors selection of Lead Authors, the use of a toothless review process, and the full, backroom re-write after the close of expert review, ensures that the IPCC doctrine will dominate the final report. I think this was not a problem for the first IPCC report, and was less of an issue in the 2nd AR, but as of the TAR and the AR4, the problem had become acute. It not only means that people who try to inject alternative perspectives into the IPCC process encounter great frustration and end up feeling their efforts were wasted, but it also has led to an attrition over the years in which people whose expertise should be brought to bear on the climate problem simply give up participating in the IPCC.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments have failed to provide oversight and accountability. The question to ask yourselves is this. If I found evidence of data fabrication and fraud in a set of corporate financial statements, I know what phone number to call: 1-877-785-1555, which will put me in touch with the Ontario Securities Commission, to whom I can make a complaint. But suppose I find evidence of data fabrication or fraud in the IPCC report. What is the phone number of the agency that I can contact, that has the authority to investigate and prosecute such conduct? As far as I am aware, there is no such phone number, and no such agency. My only recourse seems to be to contact the IPCC Bureau itself, which is not a satisfactory situation.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and

suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Several people have proposed a wiki-style process, but I think this is unlikely to work satisfactorily. However, the review process needs to be fixed. Ultimately, if the IPCC is going to have a review process at all, it has to delegate some actual authority to reviewers rather than treating them as chumps and discarding their input at will. But if reviewers are to have real authority, then they have to be chosen in a more formal way, and they have to be assigned sections to review, rather than leaving it up to chance whether some sections get reviewed. I propose the following structural reforms.

Lead Authors, Coordinating Lead Authors and Review Editors would be selected by the IPCC as is currently done. In addition, a 21-member Editorial Advisory Board would be created independently of the IPCC. No more than 7 members of this Board would be from within the fields of climate, meteorology or earth sciences. The remainder would be drawn from the fields of mathematics, statistics, physics, engineering, chemistry, economics, biology, medicine, computing, and other areas. Individuals could apply or be nominated, and those that agree to stand would submit a CV to a web site for public review, and then representatives of each field would be selected by a vote restricted to, for example, Academy members, or members of each discipline's major academic societies. Membership on the EAB would be for a fixed 7-year term, staggered so that 3 members per year would be replaced.

The Report-writing process would then be done as follows.

- a) CLA's would divide up the chapter into the major sections and assign two or more LA's to solicit contributions and produce a preliminary text.
- b) Review Editors would recruit at least 3-5 referees for each section. The names of the referees would be published. At least one referee would be someone completely outside the field of climate and climate-related sciences. Review Editors would be responsible for ensuring that the referees encompass a full range of views on the topic.
- c) If the list of referees is deemed to have arbitrarily excluded an important perspective, observers can submit a request to the EAB asking for a review of the section referee list, making a case why another person or persons should be added.
- d) Once the list is complete, the CLA's would submit the section text to the referee group. Upon receiving responses, the LA's would have the responsibility of preparing a revision and a reply to the referee comments. This process could iterate many times during the report preparation process. There is no reason to limit it to the current FOD/SOD approach which effectively only allows for only one iteration of comments. However, LA's and referees would be required to work to a reasonable time frame, such as 180 days. Also, there would be no reason to maintain the current onerous page limits. Far too much time is wasted trying to achieve arbitrary word count limits. Since the final report would be published on the internet, word limits are not important, as long as the discussions are as concise and clear as possible.
- e) If LA's are confronted with technical issues which they deem themselves unable to address, they would not be permitted to go offline and ask colleagues for assistance. Instead they would contact the EAB and describe the issue they need assistance on. The EAB would then provide them with a list of individuals to contact for advice. This is to prevent LA's from recruiting partisans to their own cause for coaching on how to rebut reviewer comments they don't want to

concede.

- f) The iterative process would continue until all LA's and referees agree to the text. In cases of serious dispute the expectation is that there would be a box or footnote inserted recording a reviewer's dissent and citation of evidence for the dissent.
- g) If a deep disagreement arose whereby an author or referee was not satisfied with the text or proposed resolution, the matter would be referred to the EAB for guidance. The EAB would first make a non-binding recommendation and ask the LA's and referees to come to a voluntary agreement. If they are unable to do so, the EAB would have the option to impose a binding resolution in the form of final text.
- h) Because referees would have some rights over the final content, the process of selection would have to be more formal than is currently the case, which is the reason for steps b) and c) above.
- i) The agreed-upon text would then go to the CLAs, who would read through the entire chapter and ensure the sections are coherent. The CLA's would make a report to section LA's advising them of any conflicts in conclusions or material and the LA's would work together to resolve them with minimal disruption to the text.
- j) Any changes would then go back to the section referees for final approval. Disputes would be resolved as above.
- k) When all chapters are complete the CLA's would read through them to ensure there are no contradictions or inconsistencies. If changes are required they would be iterated as in i) and j).
- l) Upon receipt of the final text by the CLA's, the report text would then be frozen, and no further changes could be made. The complete report would be immediately published on the Internet without a summary.
- m) Preparation of a Summary for Policy Makers would be done afterwards by a Summary-writing group that would include selected government delegates as well as LA's and referees. An iterative process would operate as above. The major changes would be: there is no global plenary session where hundreds of delegates pretend to have read the report and then vote on whether they agree with each line; and the Summary would have to concur with the Assessment since there will be no revisions allowed to the Assessment Report to bring it into line with the Summary for Policy Makers.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The discussion of uncertainty, and the assignment of ratings like 66-90% certainty etc., lends more precision to the discussion than I believe is warranted given the contents of the reports and the ways in which uncertainty over one issue (e.g. cloud feedbacks) propagates into other areas. There is a diagram in the Working Group I Summary for Policy Makers that sums up the estimated contributions of different planetary variables to the so-called "radiative forcing" of climate. Accompanying each one is an assessment of the "Level of Scientific Understanding" or LOSU. All the listed entries are "Low" or higher. In the review comments on the Second Order Draft, 12 comment number 2-1273 read:

It is notable (surprising?) that the level of scientific understanding for pre-satellite-era solar forcing which is based on proxies and models has jumped from "Very Low" in the TAR, to "Medium" in the AR4 figure. This should either be explained and highlighted here, or corrected including in this Figure which appears 3 times. In addition, this contradicts Chapter

2, page 6, lines 27-28!

The author response was: Changed to “low”. Accepted

The difference between ‘Very Low’ and ‘Medium’ for a category as important as solar influence on climate implies quite a substantial difference in scientific understanding, yet in this case was decided by what amounts to haggling between a reviewer and an author. In other words, Lead Authors don’t even claim enough scientific understanding to decide what the level of scientific understanding is. Had the reviewer not drawn attention to this item, the LOSU would have been listed as Medium; because of one objection it was scaled down to ‘Low’, suggesting that the authors had no basis for scaling it up so far in the first place.

It is also interesting to look at the way the LOSU ratings were inflated between the second and final drafts of the AR4. In the first draft, 6 out of 15 climate forcing categories were rated as Very Low scientific understanding. In response to reviewer comments, the second draft scaled down its certainty ratings so that 7½ out of 15 were Very Low (contrails includes two sub-categories, one Low and one Very Low). In other words, half the categories of major climatic forcings were subject to the lowest possible rating for scientific certainty. I did not find any review comments on the second draft saying this overstated the uncertainty, yet in the final, published report only 4 of 15 Very Low ratings are shown (with two categories deleted). And in the Summary for Policy Makers Figure SPM-2, none of the forcings in the Very Low categories appear, creating the impression of greater certainty than was indicated in Table 2.11 at the close of scientific review.

Forcing Category	Level of Scientific Understanding (LOSU)			SPM
	1st Draft	2nd Draft	Final Draft	
Greenhouse gases	H	H	H	H
Stratospheric & Tropospheric ozone	M	M	M	M
Stratospheric water vapour from methane	L	L	L	L
Stratospheric water vapour from other	V. L	V. L	V. L	-
Tropospheric water vapour from irrigation	V. L	V. L	V. L	-
Aerosol scattering and absorbing	L-M	L	L-M	M-L
Cloud albedo effect	L	V. L	L	L
Cloud lifetime effect	V. L	V. L	-	-
Cloud semi-direct effect	V. L	V. L	-	-
Contrails and aviation cirrus	M	L-V.L	L	L
Solar	M	L	L	L
Cosmic Rays	V. L	V. L	V. L	-
Surface Albedo	L	L	M-L	M-L
Non-Albedo Surface	V. L	V. L	V. L	-
Volcanic	M	L	L	L
Proportion Listed as Very Low	6 / 15	7½ / 15	4 / 15	0 / 8

Table 1: Evolution of LOSU ratings in IPCC AR4 Table 2.11, and in the SPM Figure 2. ‘-’ denotes not shown.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

There are multi-layered problems here, beginning with the fact that journals do not typically impose or enforce data archiving requirements on authors. I would like to see the following process.

- Any author who submits an article for consideration by the IPCC, or whose article is to be cited by the IPCC, is asked to sign a form certifying that data and code sufficient to support

- independent replication are available, supplying an FTP or HTTP link to the appropriate site.
- If an author cannot make such a supporting claim, the paper could still be used, but would be marked with an asterisk * and it would be noted throughout the report that studies so noted cannot be independently replicated.
 - Studies denoted with an * cannot be the basis of statements in the Summary.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The IPCC does not have a communication problem. It has a substance problem. I think that if the report-writing process I described above were followed, the reports would have more reliable substance and the IPCC would not find itself under assault from critics the way it is now.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I have outlined an alternative process above. Those suggestions are focused on WGI. As for WGII and WGIII I see little need for them since the sponsoring governments appear to make very little use of their reports. I would suggest WGIII simply be abolished and WGII be reformed along the lines I suggested for WGI.

I think you should also recognize that the IPCC began before the Internet did, and its structure is now obsolete. It adopted a rigid bureaucratic structure that had some relevance in the days before the internet imposed deep transparency on public organizations. But times have changed, and public expectations have evolved. Henceforth, from the start of the chapter review process, the attention of international bloggers will be intense, and every aspect of the report-writing process will now be done in a fishbowl. Without major reforms to the process, the next Assessment Report will simply explode on impact. All it will take is for one error to be found, or one email to be leaked, or one graph to be manipulated, and the entire report will be discredited. This is not because there are armies of nasty bloggers out there who are being unreasonable (although even if there are armies of nasty bloggers out there, they are not going away so you need to find a process that can still function in their presence). It is because the IPCC has become one-sided and brittle, and has no real ability to cope with legitimate differences of opinion. That makes it inevitable that there will be growing numbers of critics who see it as biased and insular. The choice is whether simply to press onwards with the hope the IPCC will somehow regain its former glory, or to consider whether the critics actually have a point, in which case the process is in need of correction.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Only insofar as such improvements would be connected with implementing the revised process I outlined above.

11. Any other comments

Good luck in your deliberations. If you need any further comments or input please contact me directly.

Notes:

- 1 <http://ipcc.ch/pdf/ipcc-principles/ipcc-principles-appendix-a.pdf> Sect. 4.2.4.
 - 2 <http://ipcc.ch/pdf/ipcc-principles/ipcc-principles-appendix-a.pdf> Sect. 5.
 - 3 See, for example, the comments by Judith Curry at <http://www.examiner.com/examiner/x-9111-Environmental-Policy-Examiner%7Ey2010m5d4-Global-warming-Interview-with-Dr-Judith-Curry-Part-1-Cuccinellis-Witch-Hunt>.
 - 4 <http://www.eastangliaemails.com/emails.php?eid=419&filename=1089318616.txt>
 - 5 <http://www.eastangliaemails.com/emails.php?eid=138&filename=938031546.txt>.
 - 6 <http://www.eastangliaemails.com/emails.php?eid=136&filename=938018124.txt>
 - 7 Stephen McIntyre, "Climategate: A Battlefield Perspective" presented at Trinity College, University of Toronto, March 2010. See <http://climateaudit.org/2010/05/06/trinity-college-presentation-march-2010/>
 - 8 See McLean, J. (2009) "Peer Review? What Peer Review? Failures of Scrutiny in the UN's Fourth Assessment Report." Science and Public Policy Institute, Washington DC.
 - 9 Obtained as part of a FOIA disclosure to David Holland, UK.
 - 10 They used an AR-1 model, then checked the residuals using a Durbin-Watson statistic, despite the fact that the dw statistic is not valid in an autoregressive model.
 - 11 David Holland, pers. comm.
 - 12 <http://ipcc-wg1.ucar.edu/wg1/Comments/wg1-commentFrameset.html>
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1. What role(s), if any, have you played in any of the IPCC assessment processes?

IPCC bureau member

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

In my country the focal point invite many persons to ask policy questions to include technical persons, who may not involve with policy process. I cannot recall how the policy questions were selected during AR4

2b. Election of Bureau, including Working Group chairs

There are many more experts than the positions available. Therefore the competition is severe especially among the developed countries. I did not involved with AR5 process, however the AR4 process seems to depend on strength of the focal point of each country to push his/her experts through, of course with appropriate CV.

2c. Selection of lead authors

It is OK

2d. Writing of working group reports

It is OK as well

2e. Review processes

It is fine

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

It was a bitter process for AR4, especially for WGII. I think it was because of more involvement of persons from policy side who did not respect or misunderstand scientific and technical findings. It seems like some countries tried to protect their countries rather than the world. It was more focus on wording rather than the scientific context that the report wanted to reveal. I think approval of SPM line by line should be changed to exception of content. It is difficult to use policy wording on scientific reports. There is no use to stay up late or all night to change a few words. At the end when time was out and everybody was tired something was changed and passed in a hurry and carelessly.

2h. Preparation of any special reports

It is good.

3. What is your opinion on the way in which the full range of scientific views is handled?

It is good to have balance of regions, but scientists from developing countries seem to have less capacity and number than those from the developed nations. Therefore, they play minor role in the writing processes. It is necessary to build up capacity of those from developing countries.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Each government represents and thinks of its government, not the world. My experience as a person from developing country, the focal point on IPCC and UNFCCC was the same person. It is impossible to handle both efficiently. This is because the administrator may misunderstand the story of climate change. They involved only in UNFCCC, but know very little about IPCC. How IPCC generate facts for policy makers. There should be something change about focal point of IPCC and UNFCCC.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

There are some non-peer-reviewed literatures that should be used, however with careful consideration. It might be possible to make agreement among authors, or external expert reviews to use such literatures.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

It is complicated and difficult to understand for common people. It should be improved.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The former is OK, those discovered after publication should be left for the next report or distribute on IPCC website as new discovering, if it were important.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

IPCC should improve communication with administrators and common people from developing countries. Make the finding (SPM) more simple and easy to understand for those with less scientific background. Developing countries should focus on impact and adaptation, whereas developed countries should focus on mitigation. Of course both economic different countries need to care for the whole context of climate change. People from developing countries understand only reducing GHGs, as a fashion, never aware of impact of climate change and how to survive.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

There should be less involvement of policy persons on adoption of scientific report. Adoption of IPCC reports should not use line by line procedure. This type of practice should be used for policy adoption. The policy persons should argue on UNFCCC description.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The first thing to improve is the adoption of the report as mention earlier. Other part of the process is acceptable.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Coordinating Lead Author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Seemed a bit haphazard at first, but improved as we went along.

2b. Election of Bureau, including Working Group chairs

A bit of a mystery

2c. Selection of lead authors

Also a mystery

2d. Writing of working group reports

Proceeded fairly well and in the end the TSU was a great help.

2e. Review processes

I would try and get some policymakers involved at the same time as the technical reviewers, to speed up the process.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

These were very rushed at the end.

2g. Adoption of report by the IPCC plenary

Proceeded very well

2h. Preparation of any special reports

These were available ahead of time which helped.

3. What is your opinion on the way in which the full range of scientific views is handled?

I think it was excellent

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Some governments, unfortunately, withheld their political views until the IPCC plenary. But I have no idea what to do about that. The Chairs handled it well.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

I would ask governments and technical advisors to submit publications they think relevant at the beginning of the process, and then update the list as the process moves forward.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I thought this was handled about as well as it could be.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I think that the TSU should have more staff whose sole job is to do this.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I thought this was done poorly and hurried at the end of the plenary, and to some degree after that. More planning and effort needs to be done here, especially after the problems in the last year with AR4.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

To be sustainable, it obviously needs to be dynamic.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

See above. I think that the TSU should have more staff whose sole job is to handle errors.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Support for IPCC Bureau member, lead author, coordinating lead author, contributing author. Also coordinating lead author and lead author of Special Reports, contributor to IPCC guidelines

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

The scoping and identification of policy questions is the responsibility of the governments that form the IPCC. In addition, the Subsidiary Body for Scientific and Technological Advice (SBSTA) under the United Nations Framework Convention on Climate Change (UNFCCC) can request the IPCC to consider certain issues. I think this is the correct process, whereby it is governments' responsibility that their views are indeed represented.

I have been involved in several scoping meetings. These scoping meetings follow the identification of policy questions by governments, and deliver a detailed outline to be submitted to and approved by governments. Some government representatives attend these scoping meetings, giving them a potentially large influence over the report's outline. It is unclear to me what the procedure is for government participation at these meetings. On the one hand it is good to have them in the room so experts can ask questions for clarification, on the other hand there is a need for transparency.

2b. Election of Bureau, including Working Group chairs

I don't have first-hand experience with this process.

2c. Selection of lead authors

The process of author nominations by governments and observer organisations works well from a procedural perspective, although some governments use this process to exert political influence (e.g. by not nominating certain experts). But the subsequent selection of lead authors from the pool of nominated authors is a bit of a black box. I would prefer a process whereby CLAs are appointed by the IPCC Bureau in the way they are doing now, but that these CLAs then have a much greater say in (and responsibility for) the selection of lead authors. Of course the same criteria need to be applied (representative range of views, geographically etc). This could help to avoid having authors in a team who don't deliver or obstruct the process.

2d. Writing of working group reports

Unfortunately authors are getting busier and busier, while being an IPCC author requires more and more time. This conflict means that having the best possible authors doesn't mean you end up with the best possible texts. I would strongly suggest the involvement of young researchers (at PhD or post-doc level) who assist the CLAs in the in-depth review of literature. This was done for the Millennium Ecosystem Assessment and worked very well.

2e. Review processes

Works well in principle, although I suspect that the recent commotion around the IPCC will mean that for the AR5 many more self-proclaimed experts will send in hundreds of irrelevant

comments that will take days and days to respond to. It would be very good if some selection criteria could be applied for reviewers.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Works well in principle, although there is not enough time to do as good a job as is possible.

2g. Adoption of report by the IPCC plenary

The line-by-line approval sessions of the summaries for policymakers are painful, frustrating and unfortunately very necessary. These sessions ensure that there is no more discussion about the science in the climate negotiations under the UNFCCC.

2h. Preparation of any special reports

Follows pretty much the same process as full assessment reports. No additional comments.

3. What is your opinion on the way in which the full range of scientific views is handled?

Different people will have different opinions as to what the 'full range' of scientific views is. My impression is that in WG I the full range of natural sciences is indeed covered to full satisfaction. In WGs II and III, however, people have long argued that there is a broader social science literature that is relevant to adaptation and mitigation (e.g. ethics, human security). The AR5 outline suggests that this literature will now indeed be considered. It will be a challenge though to get the right kind of authors for these topics. Governments may not think of people with expertise on these topics when nominating authors.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Absolutely essential, because of the importance of establishing government consensus within the IPCC, as the basis for climate negotiations under the UNFCCC.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

It would be good if literature (including grey literature) is collected and assessed on an ongoing basis, also in between assessment cycles. This would require some kind of clearing houses for specific types of literature, which could be set up by relevant international organisations. For example, the World Health Organisation could make an ongoing effort to collect and review all literature on climate change and human health, so that it is available if and when IPCC authors need it. This could take the form of a wiki.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

If and when possible, uncertainty should be expressed quantitatively. When using natural language, the use of qualifying statements should be avoided. For example, a (hypothetical) sentence like 'It is very likely that some countries may be affected by a change in temperature' is useless. The IPCC should avoid making uncertainty statements if there is no basis for doing so. Confidence statements are more useful in that case (although the same caveat with the qualifiers applies).

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I don't have a particular view on this.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

There is room for improvement, but I'm not an expert on public communication.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

No.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Demands on the IPCC are growing, in terms of performance, communication and scope of activities. Governments (as well as the public at large) expect the IPCC to respond to these growing demands, but seem to overlook the fact that the extent to which the IPCC can do so depends on its budget. The IPCC requires further professionalisation and a much greater support staff, including communication and legal experts. Governments who criticise the IPCC and at the same time cut their contributions should be made aware what the 'I' in IPCC stands for.

11. Any other comments

Much of the controversy around the IPCC has focused on the IPCC chair, bureau and authors. The role of governments, however, has not been subject to much discussion, even though it's governments who set the agenda, determine the budget and nominate and appoint the bureau and the authors. For the sake of transparency and public education, the role of governments in the IPCC should be clarified, including the responsibility they have in the entire assessment process. This includes the government review, which is a crucial part of the quality control of IPCC reports. How come nobody called out the Dutch government when they criticised the IPCC for getting the area of land below sea level wrong? Not only did the authors use a Dutch government report, the mistake also wasn't picked up during the Dutch government review. And the Dutch Environment Minister had the temerity in Dutch parliament to say that the IPCC should do its homework better?!

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Government focal point

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

Les points forts du processus d'évaluation du GIEC se révèlent efficaces et durables pour un organisme scientifique qui a pour principal rôle d'édifier le public sur l'évolution du climat planétaire.

Ce processus d'évaluation du GIEC viendrait une fois de plus de repréciser les différentes étapes d'adoption d'un rapport publié par le GIEC.

Les climato-sceptiques de se prononcer sur la véracité de l'information consignée dans le Rapport d'évaluation afin d'éviter les contestations orchestrées lors du Sommet de Copenhague.

Le quatrième rapport du GIEC avait été adopté depuis Novembre 2007 et les climato-sceptiques ont profité de deux erreurs mineures pour remettre en cause tout le rapport.

Les faiblesses risquent d'être la lourdeur et coût financier du processus d'évaluation.

2a. Scoping and identification of policy questions

X

2b. Election of Bureau, including Working Group chairs

X

2c. Selection of lead authors

2d. Writing of working group reports

X

2e. Review processes

X

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

X

2g. Adoption of report by the IPCC plenary

X

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

Les avis scientifiques doivent faire l'objet d'une large diffusion et de grands débats afin de trouver un consensus sur l'entière des vues

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Il sied de signaler que les scientifiques représentant les gouvernements doivent recueillir les informations auprès de toutes les parties prenantes (secteurs public et privé, la communauté scientifique, les ONG et des communautés locales de base). On fera allusion à une recherche participative intéressant tout le public. Le réchauffement climatique n'est plus une question des «initiés» mais une question de survie de toute l'humanité.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Pour améliorer l'utilisation de ces documents, on doit les rendre accessibles à tout le monde dans un langage courant.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

A mon humble avis, les anciennes présentations peuvent être maintenues

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Le traitement de l'assurance qualité des données, le contrôle qualité, l'identification et la correction d'erreurs, notamment celles découvertes après publication, doit se faire avec une rediffusion de la publication ou la reporter dans le prochain rapport d'évaluation.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Les communicateurs doivent être impliqués dans la conception de ces documents. Ces informations doivent être dispensées dans les programmes d'enseignement. Les

changements climatiques apparaissent comme une nouvelle thématique des temps contemporains.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

IPCC doit être audité par un organisme indépendant. Le rapport de l'audit doit être adopté lors d'une session intergouvernementale.

11. Any other comments

Les changements climatiques sont d'enjeu planétaire, toutes les parties prenantes ont une pierre à apporter au dérèglement climatique.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Convening lead author, Reviewer, IPCC Bureau member

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

This has evolved substantially over two decades, but it remains highly bureaucratic, and unimaginative. At the conclusion of the third assessment several of us argued that another repeat cycle of WG 1, 2, & 3 format was not either the best way to advance understanding of climate science or the best use of authors' time and efforts. But we were told not to rock the boat – this is what nations wanted.

2b. Election of Bureau, including Working Group chairs

It is arcane, and too geopolitical. I tried very hard to engage my WG2 bureau in author screening/selection, critical review of the zero order drafts, etc, and only one out of six was really helpful. Two others meant well, but didn't know the science well enough to be constructive, and the other three were simply unprepared to help in any meaningful way.

2c. Selection of lead authors

My recollection was that we had nearly one thousand nominations from participating nations. I screened all of these dossiers, and found about eighty that we simply had to recruit. We then

filled in the other half or so of the WG2 authors from the list of nominees plus a few other people for whom we sought nominations. This worked fine, and all who were asked did agree to serve as authors.

2d. Writing of working group reports

Impossible without a first rate Technical Support Unit staff to keep everyone to the deadlines, and provide the co-chairs with early indications with any problems with delivery or quality of the writing.

2e. Review processes

I thought this worked well with the TAR WG2. We selected top notch Review Editors for each chapter and instructed them to hold the author's feet to the fire in responding to reasonable reviews. Frankly I was appalled to see how poorly executed this was in AR4. Following the trail of some of the most publicized errors, it was obvious that the Review Editors did not pay sufficient attention to the authors' responses to reviewer's comments.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

The process for the Synthesis report has been different for each cycle of IPCC assessment. I thought it worked pretty well for the Third Assessment.

2g. Adoption of report by the IPCC plenary

This final plenary is inordinately cumbersome and painful, but it is a valuable part of the IPCC process. Even though we had two government reviews prior to this plenary in the Third Assessment, it still seemed as if many delegates were reading it for the first time. Without this consensus process that ensures buy-in from all participating national delegations the value of the IPCC products would be diminished. Furthermore, the final document was improved by this process – especially clearing up potential misunderstandings in translation from English to other languages.

2h. Preparation of any special reports

Unfortunately these take a lot of time and rarely seem to have much of an impact.

3. What is your opinion on the way in which the full range of scientific views is handled?

In my experience this was never a problem. A wide range of views surfaced in discussions among authors and in responses to reviewers' comments. No author ever complained to me about lack of a respectful hearing for his views. Most authors seemed to go out of their way to be reasonable and inclusive.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

This varies hugely from government to government, and especially in the sort of person who is chosen (and perhaps their marching orders) for the delegation. The Saudi delegates seemed to have only one thing in mind during our Third Assessment WG2 final plenary, which was to disrupt and delay the process as much as possible. They repeatedly challenged well-established science with absurd claims, but fortunately only rarely found any other delegation that was prepared to play such games. For the most part the delegates took this process very seriously, and as a result the SPM was improved.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

My guess is that there has been some drift in this practice within the IPCC over time. The term “peer review” is being used more and more casually, and I contend that the assessment is most rigorous when it depends solely upon the science that has been published in (or is in press with) **scholarly journals**, not simply peer - reviewed publications. This ensures some measure of quality control, especially for recent papers that have not yet been fully vetted or challenged by the relevant research community.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

This was an enormous frustration during the Third Assessment. Early in the process there was agreement that a small group of authors would be tasked to develop a common methodology for ascertaining and describing confidence in the assessment’s statements. Drafts were widely vetted by the authors and leaders of the TAR, and the product was produced in a timely way. Some while later, during the final author meeting of WG1, these authors rejected the common methodology and developed their own. Our final meeting of WG2 authors was about a month or later, and at this meeting Bob Watson (the chair of IPCC at the time) attempted to convince us to abandon the commonly agreed to methodology, which was now used throughout the WG2 report, and adopt that which had just been developed by WG1. Our authors rejected what they thought be the less useful methodology developed by WG1, and Bob clearly wasn’t happy. My sense is that some of this friction regarding confidence statements carried over into AR4.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The first line of defense is to have conscientious coordinating lead authors, good reviewers and very tough review editors. Nevertheless, one has to expect that in spite of best efforts occasional errors will slip through. What we learned in the last several months is that the IPCC was ill prepared to acknowledge and correct errors. I stumbled across the silly 2035 Himalayan glacier melt statement a couple of years ago. I sent email to a glaciologist colleague to ask how anything like this could have been written, noting that it certainly wasn’t supported by anything in the published literature. Of course I never could have imagined the embarrassment that it would cause when the erroneous statement became the fascination of the popular press. Reviewers had

actually caught this error, and the authors and the review editors screwed up by not correcting it. The policies to find and correct serious errors are well established in the IPCC. The leaders did not ensure that authors and review editors took them seriously. The leaders then further confounded matters by not immediately acknowledging the error as well as the failure of process that allowed the error to persist all the way to the final report.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Over the past few years my sense of this has gone from “adequately” to “poorly”. The Secretariat was asleep at the switch during an earlier incident involving response to Martin Durkin’s “Great Global Warming Swindle” TV show, and colossally so during the recent flap about errors in AR4. Perhaps the office needs more staff, but it surely needs more competent spokespersons.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The 3 WG model has lasted longer than I would have expected. The leaders weren’t bold or inspired enough to change it after the TAR, and unfortunately events since then, ranging from the Nobel Peace Prize recognition to the PR debacle earlier this year have prompted the current leadership to stay with what they know they can do and hunker down. I suggested several alternatives before, but it would be best to bring a younger set of climate scientists together and ask them rather than the generation about to retire how to best use their time in an IPCC assessment. Geoengineering is a topic that is absolutely begging for a serious assessment.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

A strong science presence in the Secretariat would certainly help. It is a little known fact that only a handful of people are paid to do the work of the IPCC, and they are largely the paper pushers, secretaries, etc. As essential as this work is, employing a few sturdiest scientists in rotating positions within in the secretariat would raise the scientific profile and effectiveness of this office.

11. Any other comments

I wish to add my thanks to members of the committee who are undertaking this review. It is very much needed and I wish them success in making course corrections in the IPCC trajectory.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead Author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

IPCC should continue its policy relevant and not policy prescriptive stand. IPCC should continue to maintain its scientific independence in its assessments, hence the scoping and identification of policy questions should continue to be based on credible science and not be influenced by the UNFCCC negotiation stands of any negotiating groups.

2b. Election of Bureau, including Working Group chairs

Limitation of working group chairs to 1 term may bring fresher approach and more transparency to the process.

2c. Selection of lead authors

A more structured rotation of lead authors would enhance assessment transparency. The need to engage more developing country scientists in the assessment would enhance the image that IPCC assessment is an inclusive assessment by all countries scientists and not confined to the developed countries scientists.

2d. Writing of working group reports

Coordination between working groups reports can be further improved.

2e. Review processes

Current process is good. However need to see how to overcome weaknesses that allow glaring errors to escape the review process.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Agree with current structure.

2g. Adoption of report by the IPCC plenary

Agree on current process.

2h. Preparation of any special reports

Very useful reports.

3. What is your opinion on the way in which the full range of scientific views is handled?

A more inclusive approach need to be taken in the handling of the full range of scientific views.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Current process should continue.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Reference to published work in English continue to dominate the IPCC assessment process. There is a need to enhance the mechanism for reference to work published in other languages. Regarding non peer reviewed literature, an internal IPCC review process is necessary (say within the working group itself) before the literature is used and quoted in the assessment.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Greater uniformity of characterization of uncertainties between each working group report and the synthesis report will make the reports easier to understanding and digest regarding uncertainties. Narrowing of uncertainties is also necessary to maintain interests by governments in the IPCC assessments. Interpretation of and how to use uncertainties at country level implementation are also necessary.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Transparency will help governments, the scientific community and the public continue to maintain their trust on IPCC. It is necessary for IPCC to quickly inform on any errors detected in its assessments..

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

IPCC should continue its proactive communication strategy with the media and public. IPCC should also be transparent on the weaknesses made in the assessments. The graphics produce by IPCC are useful at country level for communications to the public. If some of those graphics can also include a set of more country focus graphics, it will further help enhance applicability of IPCC assessments at local levels.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

For the short to medium term (5-20 years), the IPCC assessment need to have a higher component of regional focus. One of the way is to have a 6-8 year main assessment cycle, with a mid-term assessment focus on regional assessments.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The decision process within the IPCC management and Secretariat need to be made more transparent. Regarding funding, for the long term sustenance of IPCC, a more stable funding mechanism is required. A regular budget mechanism is one of the possible options.

11. Any other comments

In the review process, the IPCC should also examine the overall structure of its inter-relationship and linkages with the UNFCCC, WMO, UNEP and other UN bodies, in particular of its long term existence, funding mechanism and the delivery of assessments and services.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

CLA, Reviewer

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

STRENGTH: It is lengthy and collaborative between experts so likely to be very pertinent.

WEAKNESS: Few experts can be included outside govt. .nominated pool through search/call for individual nomination publicized through web.

Recommendation: I think not always majority rule should dominate. Marginal voices also need careful consideration. marginal voices both in literature and public mind found in mass media, civil society voices.

2b. Election of Bureau, including Working Group chairs

Recommendation: more gender balance be tried.

2c. Selection of lead authors

WEAKNESS: country nodal points may not always have full list of experts in the field. Especially in developing countries the connection between academia and govt nodal institution is sometimes very weak or does not exist.

Recommendation: scope for inclusion of one /two renowned experts be kept from outside the

pool of national govt. nominations.

2d. Writing of working group reports

STRENGTH: Writing is done by a team of experts in the subject.

Weakness. There is no scope of cross verification of assessment done in the interim period with outside IPCC world of experts. So care must be taken for inclusion of any information.

Information from peer reviewed literature be mandatory. For any grey literature very careful scrutiny is needed. Which calls for more time commitment if literature is not peer reviewed source. LAs an CLAs need to act as peer reviewer for such sources. Lack of information is non peer reviewed information is worse. The author team needs to be unbiased and independent.

General observation is in many developing countries there is no time readjustment/recognition /compensation for LA/CLA and it becomes an additional responsibility mostly out of personal time. So experts taking part out of commitment to the subject despite good knowledge, intention are unable sometimes to devote desirable time for the task . More time commitment through official recognition and readjustment is necessary at country level to commit dedicated time for collation, assessment and cross verification of the knowledge.

2e. Review processes

STRENGTH: It is very lengthy and meticulous .

WEAKNESS: It may so happen that one reviewer may not have global knowledge and all detailed knowledge.

Recommendation: So LA 's role in review process must increase. More emphasis need to be given to peer reviewed literature. If grey literature is used LAs be involved in peer review of the grey literature. Peer reviewing of grey literature needs to be done with as much seriousness as review and report writing. If needed grey literature can be peer reviewed by outside reviewers.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Strength: It is done in a very lengthy and meticulous way. But same rigour needs to be maintained across all working groups.

WEAKNESS: It is important to reiterate the importance of the reports to participants at the beginning of each meeting of both SPM and Synthesis report. It will act as self warning and reminder. This is not done usually. An agreed upon rules may be circulated and kept on display to activate such effort.

2g. Adoption of report by the IPCC plenary

STRENGTH: It is very meticulously done.

WEAKNESS: Balance between scientific knowledge and political demand sometimes comes in the way.

Recommendation: Scientific information/assessment need not be traded off . If needed some explanation for scientific terms may be inserted if needed rather than taking off scientific facts. It is kind of caution.

2h. Preparation of any special reports

Strength: Important reports are prepared

WEAKNESS: time line for decision on special report is rather rigid

Recommendation: there should be some scope for late suggestions to be accommodated for special reports.

3. What is your opinion on the way in which the full range of scientific views is handled?

STRENGTH: with necessary rigour

Recommendation: with growing climate skeptic views the need for rigour may have to be revisited and task will be tuffer.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

WEAKNESS: Governments try to avoid any statement which might become binding on them. Nationalistic views dominate.

Recommendation: More country level/national dissemination meetings involving political heads are needed.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Recommendation: with growing climate skeptic views the need for rigour may have to be revisited and task will be tuffer.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Weakness: currently not very sound

Recommendation: uniformity across working groups is needed

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

STRENGTH: they get discussed in LA meetings

WEAKNESS: sometimes LAs with regional knowledge are depended on such matters.

Recommendation: LAs and CLAs need to be reminded of their responsibilities from time to time . they need to understand it is not like any research paper with much independence but it is presenting a knowledge pool . so orientation is needed through some instruction sheets etc.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

WEAKNESS: may be AR4 was first attempt to go to media most widely so past experience did not exist. Without any strategy for Media communication agreed upon within IPCC scientific committees which obviously needs to be done through consensus building it was like everybody's baby no one owning it .

Recommendation: It is important to have a media strategy of course everybody should get due visibility and can take part without any single human face attached . IPCC as an institution has it's unique character , plurality that needs to get focused but in a well defined and strategic manner. May be all meetings should have a time slot to discuss this in AR5.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

STRENGTH: it is one single big global cooperative effort among experts

Recommendation: It can have national replica (going beyond NATCOM) which can then become a good ground work for global assessment.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Government Focal Point, government representative in the Bureau

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

Overall recommendation for improvement:

Existing rules are efficient and working well. However IPCC should ensure that the existing rules, procedures and guidelines are well understood and applied through additional guidelines and a quality check. This would imply also additional funding and human resources.

2a. Scoping and identification of policy questions

strengths:

- Through focal points, policy questions issues can be identified, collected and prioritized with the help of experts in the ministries, representatives of the society, scientific experts.
- The representatives of the IPCC (Secretary, Chair or Vice Chair) or other people active within the IPCC, such as WG Co Chairs, WG Vice Chairs, authors etc are often present in UNFCCC meetings and are so informed on policy needs.
- The IPCC responds to formal requests by the UNFCCC regarding scientific support to policy needs and questions

Weaknesses:

- The IPCC is often not in the position to react promptly and to deliver within a short period of time because it works with well established procedures, budget arrangements have to be made, decisions are needed by the plenary, the work is well planned and reflected on and it seeks to have a balanced approach: representatives from complementary domains of expertise and also geographical balance. This way, strength (the organized way of working etc) can sometimes be a barrier to fast delivering.

Recommendations for improvement:

- It is to me very important to have periodical overall assessments. However, there is also a need to provide scientific support or update to the UNFCCC process in between two IPCC assessments. A possibility would be to have staggered reports: WGI, WG II and WG III. Another option would be to have more special or technical or methodological report. This demand a lot more effort from the TSU's and WG co chairs. This infers more resources have to made available e.g. via the UNFCCC.

2b. Election of Bureau, including Working Group chairs

Strengths:

- The IPCC tries to reach the right geographical balance as well as a balance regarding expertise and juniors versus senior experts.
- for the election, member states can consult the CVs of the candidates

Weaknesses

- It is difficult to find out, based on the CV if experts are the best candidates, because not only the publications are important. Candidates should also have other capacities: able to work together, able to motivate others, able to chair meetings which one cannot deduct from a CV or paper.

Recommendations for improvement:

- It would however be useful if candidates introduce themselves in the regional groups and explain how they see the IPCC functioning in the future; things they would like to keep or change etc.

2c. Selection of lead authors

Strengths:

- IPCC tries to reach a geographical balance as well as a gender balance. Focal Points have the opportunities to nominate the best authors.

Weaknesses

- Sometimes nominations are very scarce for some regions

Recommendations for improvement:

- Probably, some focal points should do more effort in identifying the right experts. For this they could seek the help of existing mechanisms and/or a selection committee. Governments could foresee a budget for selected authors so that they can work properly. Now a lot of the IPCC work relies on voluntary work, additional work. Often, this type of work is not awarded properly although it is important, essential and quite difficult. In general, scientists that do efforts for bridging the gap between scientists and policymakers should be rewarded so that this influences their career in a positive way. Maybe, in the education system, people could be trained for doing assessments and ‘translating’ science outcome into policy relevant information. This might help in attracting the very best experts.

2d. Writing of working group reports

(Was never involved, so difficult to judge)

Strengths:

- The TOR are discussed in depth. It is an iterative process with several occasions for reviewing. All stakeholders have a chance to give comments and provide amendments, as long as justified, based on peer reviewed literature. So, people that state that the IPCC report is not reflecting different views / schools etc should have done so in the review phase.

Weaknesses

- It is a long and labour-intensive activity. By the time the report is approved by the plenary, new literature is available and the report is thus conservative (outdated?)

Recommendations for improvement:

- Submit the process to a consultant to identify how the process of writing can be more efficient.
- During the process of writing, more interaction is needed between the WGs in order to see if issues are dealt with in a coherent way by the different working groups. Therefore a clearer guidance by the IPCC is needed e.g. with respect to the handling of uncertainty (need for

transparent and traceable judgments on likelihood, level of confidence,...) by the 3WGs, the use of scenarios,

- there should be a check of the references used by one or more experts for each of the WGs; or it could also be a ‘cross cutting’ task
- Introduce “update reports” to inform governments and stakeholders of significant changes in scientific understanding

2e. Review processes

Strengths:

- There are several occasions to comment on the assessment.
- As long as the comments are based on peer reviewed literature, all stakeholders can provide input.

Weaknesses

- I do not know if all potential ‘reviewer’ had a chance to read the drafts and provide input.

Recommendations for improvement:

- Make the drafts available on a website to allow more stakeholders to comment. Here, it is important to indicate the format of the comments, their justification, references from the peer reviewed literature etc. Comments that do not seem founded should be rejected to prevent expert’s loose time dealing with these.
- A greater transparency might be needed by making the comments including the response available on the web. It is maybe not needed to communicate the names of the reviewers.
- rules should be applied in a rigorous way (e.g. with respect to dealing with grey literature)
- there is a need for a better guidance by the IPCC of the review editors: a better description of the work that is expected from them. For example, review editors should not only focus on their chapter but also look into other chapters how the subject of their chapter is treated, to increase coherence and avoid errors. It could also be their role to check references and they could also be member of cross chapter and cross WG review panels.
- The review editor should also get more visibility in the process. It is after all a difficult and challenging job.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Strengths:

- The potential users of the report are requested (via the focal points) and via their involvement in the scoping process to provide insight in what policymakers need. So, the report should, respond as much as possible to the needs of policymakers.

Weaknesses

- It is difficult for policymakers to formulate a policy relevant question. Often it are short term questions. But Policymakers should learn to look far ahead and identify what type of scientific information they might need in the future.
- The response to policy questions requires input from different working groups. WGs have their own agenda, way of working etc. Because of time constraints and also the difficulty for

experts from different domains of expertise to communicate, it is difficult to reach an ‘integrated response’

recommendations for improvement:

- It is very important to identify the draft TOR of the SYR very soon in the process so that each WG can see what type of contribution is needed and how and when the WGs will work together to reach this integrated approach. This requires an additional effort of the scientists as well as from the WG co chairs. I think that here lies an important role for the IPCC vice chairs (which until now have no real description of their role and mandate). It is a task for them to oversee the work of the different WGs and to enhance a coherent and integrated approach, to increase the coherent treatment of issues in the different working groups. This could also reduce the errors (see error concerning glaciers in WG II; if WG I authors had been involved, the error would have been identified very soon). The Vice shares could also overlook the balances in the 3 WG reports
- IPCC should be able take more profit from the ‘research dialogue’ (UNFCCC SBSTA item 6) and discussions within the climate negotiations. UNFCCC secretariat could set up a system that identifies and collects policy questions and research needs in a systematic way.

2g. Adoption of report by the IPCC plenary

Strengths:

- By this procedure, all parties have to adopt the underlying report and approve line by line the SPM. When finally entirely approved, it becomes a very good basis for the UNFCCC negotiations, since all parties agree on the content.

Weaknesses

- It is very time consuming. Its strength is also its weakness. Parties try to influence the texts made by the scientists. In some assessment fora, the work is done by scientists only and no parties are involved. This might deliver reports that scientifically are better but that are not entirely supported by the parties.

Recommendations for improvement:

- develop a process for a more efficient approval procedure for the SPM

2h. Preparation of any special reports

Strengths:

- it is a way of dealing with specific requests (e.g. by the UNFCCC) in between two assessments
- it is an in depth assessment of an issue that later on could go into the normal periodic assessments

Weaknesses

- At some times, there are several proposals for SR. It is than difficult to set priorities. Budget and human resources are often a limiting factor.

Recommendations for improvement:

- ?

3. What is your opinion on the way in which the full range of scientific views is handled?

This depends on the nomination of experts and the final selection. If later on it seems that not all views are assessed, reviewers could make comments and provide the necessary peer reviewed literature to enhance the overall assessment

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

One of the roles of the governments is to give guidance to the assessment process, without interfering in the science itself by

- identifying themes, items , policy questions
- setting priorities and identifying calendars
- developing rules and procedures
- oversee the balance of the report (issues, geographical balance, balance in authors (expertise, geographical and gender balance)
- guide and also control (in a way) the IPCC secretariat to see it is functioning well and the budget is spent well and in agreement with the decisions of the plenary....

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Priority should be given to peer reviewed article. For some regions or research domains peer reviewed literature is lacking or very scarce. So, than there is no choice and if one wants information, it has to consider non peer reviewed literature. Dealing with non peer reviewed is difficult and dangerous.

recommendations for improvement

- i. There are different categories of non peer reviewed literature. Some of this literature is of high quality and reviewed in one or another way such as OECD report, reports from the EEA,...Guidelines could differentiate between different types of literature
- ii. to increase the high quality and peer reviewed literature in some regions, capacity building is needed

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

It should be handled in a coherent way.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

This question is about two different issues: data management and quality control at one side and dealing with errors at the other side.

I think the IPCC does not have the means to deal with data management and quality control. Each scientist should respect certain ethics and be responsible.

What the errors concern, I think it is important they are dealt with very fast and corrections should be communicated soon, via the web, via a corrigendum etc... Procedures on how to deal with errors should be developed, in particular for errors that occur in Sims that need the approval by the Plenary.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Communication with the media is very important. Apparently the climate skeptics were better organized and had the resources to communicate while the IPCC did not really have the capacity. It requires senior and trained staff.

What the outreach towards the public at large concerns, probably other UN bodies are better placed. The IPCC has not the resources to communicate properly.

A communication strategy has to be defined and the best people should be engaged in the secretariat. A few attempts were made to get insights from private consultants on this matter but the plenary had no access to the recommendations

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The IPCC assessment mode has proven that it is working and is probably the best in its kind. At the other hand the world is getting more and more complex and climate change should be seen in the context of an earth system approach.

It is also not obvious to have the best scientists involved in the process. It takes a lot of their time and is not really rewarding in term of 'career planning'. A solution has to be found to deal with this.

The IPCC secretariat is having more and more difficult times because the IPCC process is getting bigger and more complex. The management structure should be adapted to the requirements of the assessment process.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The assessment work has been increasing, the requests from the UNFCCC increase, and the world gets more complex. This requires that also management structures adapt. Maybe it is time now to revise, adapt and clarify of the roles of The secretariat, the TSU, chair, vice chairs, co-

chairs and vice chairs etc.

The secretariat should be well equipped

The budget should be stable and not only relying on voluntary contributions

11. Any other comments

The WG on the future of the IPCC was closed down during the Turkey plenary (spring 2009). Maybe re-opening of this WG could be considered to deal with recommendations resulting from the IAC review.

I think that overall the IPCC assessment worked well. Of course there is always space for enhancement. And taken into account the increasing importance of the results of IPCC assessments, the increasing amount of knowledge to assess and increasing complexity, it is time now to review the process and procedures.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Government delegate at IPCC panel sessions, Expert reviewer, IPCC Bureau member, Technical Support Unit, Coordinator of a Cross-WG process. Also Contributing Author to a Special Report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

The wording of paragraph 2 in the “Principles governing IPCC work” makes it clear that the panel’s role is to assess the scientific basis for policy and that has to be carefully separated from identifying or scoping policy questions. It would not be possible for the IPCC to identify policy questions and still be seen as completely neutral in relation to policy.

So far the identification of policy questions that merit a scientific response comes only broadly through government participation in the IPCC panel sessions and their approval for the preparation of special reports. This means that the scope of IPCC assessments has been tightly structured around the underlying science. Governments do formally approve the set of key points to be covered in the Synthesis Report that comes out of each assessment, but there could be a more detailed input to the focus and structure of the major assessment reports. However, it needs to be recognized that some attempts to set that up have shown that it is very difficult. In 2008, governments were asked to comment on the broad structure for the fifth IPCC assessment and there was a very mixed set of responses.

The structure of the three Working Groups raises some impediments to covering the cross-

disciplinary aspects of policy relevant questions. For example, the development of Representative Concentration Pathways (RCPs) as a basis for much more consistent cross disciplinary coordination was a major step by the research community, but has not been very well reflected in the final outlines for the WG2 and WG3 reports. This shows that the development of cross-disciplinary analysis of the current understanding of climate change has some structural barriers.

A perspective on the need for better cross-disciplinary assessment was expressed by the UK in their comments during the initial planning stages for the AR5. (See document IPCC-XXVIII/INF.1 for the Budapest Plenary meeting in April 2008, page 40). That proposal would reflect the growing understanding that adaptation and mitigation can no longer be separated in the context of climate change. It is time to consider some future restructuring of the Working Groups as that could lead to improvements in the interface between science and policy.

2b. Election of Bureau, including Working Group chairs

In some ways the bureau elections are the most sensitive IPCC meetings with considerable active government involvement. Key parts of the selection process were set by Prof Bert Bolin in terms of ensuring balance between different WMO regions, and that remains necessary for what is a global issue.

The selection of WG co-chairs is driven very much by government negotiations within these panel sessions. In principle, it would seem useful to try and arrange broader input to this through the international science organizations and the UNFCCC, but achieving that in a manageable way consistent with the present process and the controlling role of government delegates would be difficult.

2c. Selection of lead authors

The selection of lead authors is primarily based on nominations made by governments but it requires the Working Group Bureaux to make a balanced selection from those nominations. Lead Authors can also subsequently ask for their chapter teams to be extended and this was done for a Chapter of the WG1-AR4 to broaden the range of expertise, but that was still based on the nominations that had originally come from governments.

Some attempts have been made to set up a group of lead authors for a chapter who cover a range of views including the extremes, but in my experience these have led to a poorer quality assessment. Most of the top climate change scientists are heavily focused on the science and not linked to lobbying for or against policy responses. I have been privileged to meet many of the world's top scientists over the last forty years, both in climate change and other disciplines, and they are always open to new ideas and will never dismiss alternative viewpoints lightly.

2d. Writing of working group reports

There is never enough time - but we can not make the process slower. In some cases the science is moving forward rapidly and there needs to be better recognition that the literature that is being

used as a basis for the assessment changes between the two drafts that are available for open review. For the WG1-AR4, I played a role in ensuring that we had a moving deadline for the peer reviewed papers and reports that were being cited so that the drafts could keep up with the recent literature. To ensure that the reviews of the drafts could be thorough, we established a web based system to provide all reviewers with access to draft copies of all the papers that had been cited but were yet to be published. Then, for the final report, a very specific deadline was set for the publications that could be cited and this was closely tied to the end of the second review process. All those participating in the expert review were notified of the final publication deadline so they could submit a final round of papers, that had been accepted for publication, for consideration by the lead authors.

2e. Review processes

In the AR4 the number of review comments got to a level where constructing responses to them took very large amounts of the lead authors' (LAs) time. While in most cases the comments were substantive and valuable thus leading to improvements in the text or figures, there were other cases that simply wasted the authors' time. Expert review comments should now become subject to a screening step by the Review Editors (REs) for each chapter before they are passed on to the LAs. This is consistent with the role set for REs and can be used to filter out comments that have no substance. For example, many comments submitted by Dr Vince Gray (from NZ) just said something like "replace 'very likely' with 'most unlikely' " and gave no reason for that radical change. (That was the full comment made on a sentence in Chapter 9 of the second draft of the WG1-AR4.)

Expert review comments will need to meet a higher standard if the assessment process is not to become increasingly waylaid by floods of irrelevant or poorly based comments.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Preparation of the Synthesis Report (SYR) should not be mixed up with preparation of the Summaries for Policymakers of the Working Group reports. These are managed quite separately and the SYR requires a much more cross-disciplinary structure.

A more substantive issue in this context is the relative timing of the SYR and the Working Group reports. It has been suggested that the SYR could be delayed until after completion of the WG reports to avoid some clashes in time for lead authors involved in both the WG and SYR reports. However, delays between the WG and SYR reports would lead to more complex problems because climate change science is always producing new results. In my view it would be better to give more consideration to extending the author team for the Synthesis Report beyond just those who are committed to the Working Group reports.

2g. Adoption of report by the IPCC plenary

While some argue that this takes a lot of time and does not result in much change. I would disagree and I have been formally involved in the adoption and SPM approval for ten major IPCC reports. There are issues with some governments having used, or tried to use, the plenary

process to substantially modify language provided by the lead authors. Also the current process can be difficult for the Working Group co-chairs, however, this is the key step in connecting a rapidly developing aspect of science to the relevant policy process. I do not think it can be changed.

The language used by specialists in constructing the draft SPM does often need to be modified to become more readable by a much broader community and this is an outcome of the approval process. However, in some cases the material that was approved in an SPM has also become partially restricted by government policy perspectives. But the WG1-AR4 SPM, which was very carefully set up by Susan Solomon and co-authors, showed that, where there is a very strong scientific basis for all the points being made, governments will adopt them.

2h. Preparation of any special reports

Some special reports are very important. The Special Report on Emission Scenarios set up the framework for ten years of detailed climate modelling and close consistency across many different climate modelling groups that has led to better subsequent assessments of the science. Some other special reports have had only minor significance. However, the selection of topics for these lies very much with the governments rather than with the IPCC bureau or scientists. International science organisations should become more involved and the IPCC could have a clearer framework for considering special report proposals in a timetable that avoided clashes with the full assessment reports.

3. What is your opinion on the way in which the full range of scientific views is handled?

This can be a confusing issue to those who are not scientists. The purpose of the IPCC process is to produce an “assessment” and while that should consider the full range of current scientific views it should also reach some judgement on what are the more robust analyses in the light of recent data and analyses. In this respect, some will raise the question of how to define the range of “scientific views” because there is a vast difference between what is presented in the general media and what appears in recent peer reviewed scientific journals. That vast difference has now been verified by several completely independent studies.

There have also been some quite incorrect statements in published literature saying that the IPCC process is designed to create consensus. The approval process involving government delegates does require a consensus, but the development of the assessment reports by the authors certainly does not. In fact, the only place where the word “consensus” appears in the instructions to lead authors shows quite clearly that the aim is to avoid that becoming a restriction as follows: “Lead Authors are required to record in the report views which cannot be reconciled with a consensus view but which are nonetheless scientifically or technically valid.”

In my experience, where there is a lack of consensus on key issues that has generally resulted in the IPCC assessments assigning a higher degree of uncertainty or else acknowledging that the uncertainties can not be defined quantitatively. A good example of that is the lack of any best estimates or specific confidence ranges for future sea level rise appearing in any of the previous assessments.

Where the IPCC assessment reaches a conclusion that is inconsistent with views that are strongly held by some contrarians, the report should make clear statements as to why the majority of climate scientists do not accept those views. In that context, previous assessments may have placed too much emphasis on the most recent science literature. Repetition of why a continuing contrarian view does not appear to be objective or consistent with new data should be given a higher priority in future.

The key point here is that while the IPCC was set up to inform governments about climate change science, it is now clearly doing that for the much broader community as well. This is a shift in context and it now requires some modification to the design of the reports. In the WG1-AR4, Susan Solomon introduced Frequently Asked Questions which did cover some of the basic aspects of climate change science and these have now been seen as particularly useful.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Generally the role of governments is very good. They have to approve the outline for a report and nominate authors, but then stand back while the WG co-chairs and bureau manage the process. Then the lead authors prepare a first draft that is subject to expert review before a second draft becomes open to government comments. So the role of governments is primarily to control the overall process and then have the opportunity to ensure that drafts are fully reviewed before they become accepted.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The emphasis on peer-reviewed literature is valid but does in some cases raise constraints on the amount of material that can be considered in the assessment process. This varies considerably between the WGs. WG1 covers the basic science of climate change which is heavily based on peer reviewed literature. However, much of the analysis of climate change impacts and adaptation cover a local context and so do not always appear in papers that have been subject to peer review. This is particularly true in developing countries. Similarly, reviews of the distribution of energy consumption across different sectors of society, and plans for future energy production are often only available in non-peer reviewed reports.

Some careful process is required to identify situations in which a non peer reviewed paper should be used in the assessment. That also needs to take some specific account of reports that have been prepared for governments. In the case of the USA, it is often the case that a major government report has been subject to peer review by more experts than any individual paper in a top journal. However, in some other cases it is not easy to define the level of independent review that has taken place, so this is an area where some further basis for careful judgment needs to be established.

6. What are your views and suggestions regarding the characterization and handling of

uncertainty in each of the working group reports and the synthesis report?

This is an area in which I have played a major role so my views are based on that, but there is a clear basis for recognising that the IPCC has made significant advances in the treatment of uncertainty. The whole approach to covering uncertainties in the AR4 was extensively reviewed at an experts meeting prior to the appointment of the lead authors (see <http://www.ipcc.ch/pdf/supporting-material/ipcc-workshop-2004-may.pdf>). The ways of treating uncertainties in the AR4 were then discussed extensively with groups of lead authors and the finally agreed structure was made available publicly (see <http://www.ipcc.ch/pdf/supporting-material/uncertainty-guidance-note.pdf>).

A key development in this was to recognise that a simple approach using one set of terms had become too limited to cover all types of uncertainty. It has now been widely agreed that there are structural differences between describing uncertainties in understanding of underlying processes and in the ability to quantify them. For example, the causes of sea level rise are very well known but their rate of response to global warming can not currently be well quantified. In contrast, the effects of climate change on agricultural production go well beyond basic plant processes and have to consider the effects of climate change on pests and crop diseases, continuing developments in crop productivity, mobility in farming that is already occurring, as well as potential shifts in dietary choices across society. Similarly experts on the technology for alternative energy sources are able to make projections for what can happen in the next few decades and assign some levels of likelihood for the outcomes, but over the longer term this opens up questions for future development where there is no clear basis for a quantitative answer and so the analysis has to rely on covering a representative range of scenarios.

In this perspective, we recognised that more than one type of description has to be covered if one is trying to explain uncertainties carefully. That leads to a separation between confidence in understanding the basis for changes and then estimating the likelihood of specific amounts of change. When giving an invited presentation on the IPCC's treatment of uncertainties, my talk was followed by experts on earthquake risk who were doing a similar split between regions where the fault lines were well defined, so a probability distribution for earthquake risk could be quantified, versus regions where all that could be said was whether there may or may not be an earthquake and so a much more qualitative framework was being used.

There has been some criticism of the WG I report for using ten different levels of likelihood and using words rather than numbers. It may be clearer in future to use statements like "more than 90% likely" rather than "very likely". I will be raising this in an expert meeting that the IPCC is holding.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Data quality control is the responsibility of the scientists or research groups that collect or compile the data. IPCC lead authors can assess the reliability of what has been done, but are not involved in data management or extensive analyses.

Rectifying errors that are made in producing an assessment report is a very different issue. In the case of the statement that Himalayan glaciers are susceptible to significant melting by 2035, that was a significant error and the reason for it is still not clear. The IPCC did the right thing in admitting the mistake, but the question is whether that should have been done more quickly. However, it also raises the question as to why it was not picked up during the two rounds of review because a very similar statement was being made in both the first and second drafts. Several review comments were made on the paragraph, including a query by the Japanese government as to the level of confidence in the statement. But this does raise a concern about the quality of the review process and it now seems necessary for IPCC Working Groups to ensure that each chapter is reviewed carefully by several experts rather than just relying on the open review process.

Other issues being raised about wording in the AR4 are not so serious and some of the complaints are quite subjective themselves. To argue that citing a report by the World Wildlife Fund is inappropriate may have some basis, but it is rather unbalanced given that their report was clearly based on the underlying peer reviewed literature itself and was merely judged by the Lead Authors to have given a balanced summary. The furore in the media from November 2009 to March 2010 is starting to be recognised as unbalanced, as shown by the recent apology of the Sunday Times on this issue.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The IPCC was not originally set up to communicate with either the media or general public and for quite some time a few governments were clearly opposed to inclusion of media liaison staff inside the IPCC Secretariat. This changed towards the end of the AR4 process and it did slowly improve. However, the resources for better communication are very limited and there also has to be a very careful allocation of responsibility between the IPCC Secretariat and the WGs that are managing most of the preparation of the assessment reports.

The most important way forward for communication with the general public would be for the findings of each IPCC assessment to be rewritten in much more general terms for the public. This was the intent in covering Frequently Asked Questions in the WG1 AR4 but it could be broadened into the production of a simplified version of the Technical Summary of each report for distribution through bookstores, libraries or web sites. However, the key question is whether governments would cover the additional costs of this, and whether it would be more appropriate to have another organisation doing it. Unfortunately, I have to say that when UNEP produced a short summary of the WG1 AR4 some of us were very concerned at the way some levels of confidence were misrepresented. This shows that any move towards production of a general public version of the report has to be carefully controlled, but as we showed with the FAQs it can be done.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

While the assessment model has many strong features and the IPCC has pioneered this type of

process, some aspects of the process can be improved as has been noted above.

However, those who argue that the IPCC should be disbanded or totally replaced with national assessments are taking a very extreme stance on the need to deal with climate change. The IPCC process brings out a carefully balanced recognition of the issues for developing countries. Furthermore the recent formation of a similar organization to assess global changes in biodiversity is clear evidence that the IPCC process is being widely seen as very valid and increasingly important for other issues.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

All these aspects can be improved but the first step should be to provide the IPCC with your external review comments and then allow changes to be decided in the context of the formal IPCC panel sessions. This review is important but it has to be recognised that it is the panel of government delegates that is the controlling body of the IPCC process, not the chair or secretariat, or working groups.

11. Any other comments

The present review of the IPCC process is an important step. In my view this should be done more often – perhaps after the completion of every major assessment. However, this review process has to recognise that the IPCC process is run by governments.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

LA

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

I guess that the crucial point in the AR is the preparation of the Synthesis report, including the Summary for Policy Makers. I recommended that in the preparation of TS or SPM extrapolations will be limited as much as possible.

3. What is your opinion on the way in which the full range of scientific views is handled?

I have a positive opinion on the way in which the full range of scientific views is handled in preparing the chapter of the report. More doubts are relative the way in which these are reported in TS and SPM

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The governments should have a more productive role in the revision of the draft version of the report chapters.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The role of corresponding authors may be focused on collecting and reviewing "grey literature"

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The uncertainties are generally well reported in the report chapters; whereas when the information is summarised in the synthesis reports uncertainties are not always well described

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I guess that the IPCC procedure for control and rectification of the errors is very good. For example each chapter reports passes at least 5 reviews.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

This is a very difficult point, since scientific communication with media is not very easy. Thus, I suggest that these communications should be managed by experts that filter the information from scientists and media

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

No

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

I guess that local governments should support with fundings the work of the CLA and LA. Unfortunately this is not always true.

11. Any other comments

No

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

Follow IAC process.

3. What is your opinion on the way in which the full range of scientific views is handled?

Emphasize quality rather than quantity.

From the accumulated experience, prune sources of less than reliable input.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

In the IPCC study process, influence of government should be minimal. Otherwise science will be compromised.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Given that most governments have accepted the IPCC premise that human activities impact climate change adversely, the ongoing activities should focus on monitoring. What is more

important is to assure that the global scientific community is actively engaged in the framing of treaties, protocols and implementation of S&T measures. Do not leave these to politicians and financiers and interested industries. This would require more expertise and number of experts in science policy in IPCC not scientists.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

No comments.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

No comments.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Please bear in mind that media depend on advertisements for surviving and the energy industry annual turnover is US \$ 3.0 trillion. This is formidable in influencing media to resist changes in their vast investment in capital stock in polluting installations and systems.

Let the increasing occurrences of major natural disasters speak for climate change advocacy and let IPCC focuses more on measures that alleviates human sufferings in their publicity.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

No comment.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

No comment.

11. Any other comments

Please strengthen IPCC capacity and capability in S&T inputs on treaties, protocols and implementation procedures after Cancun 2010.

IPCC has general global political and public acceptance.

IAC Review must not undermine IPCC as in undermining IPCC, we will unwittingly undermine the vital role of science and technology in combating adverse effects of human activities in climate change.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Reviewer

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

I think IPCC does not give the appropriate weight to promote and report on experimental work

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The problem is that only a FEW government seem to care about IPCC

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

As I said before IPCC should give more emphasis to the on going non published work. It should concentrate on key issues related to the global warming problem (i.e. the contribution of space observations). IPCC should not simply collect literature.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The problem of uncertainty is another key question together with the issue of validation. Model validation (if philosophically acceptable) must be done on quantitative basis and any mention of "third decimal digit" must be abandoned. The uncertainty in the prediction should be reported as an indication of the basic scientific discussion.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Data must be made available to the whole community in such a way that on a voluntary basis different evaluations would be available.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

IPCC should always emphasize that we are dealing with a very complex scientific problem. As such, nobody expects any definitive solution in a reasonable time.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

IPCC should concentrate on discussions between mitigation of the consequences of climate change and adaptation. At the present time, the basic philosophy of IPCC is mitigation. Almost all scenarios are based on the abatement of greenhouse gas emissions. At the present time, there is apparently no chance to pursue these objectives but instead of recurring to adaptation, there is a growing interest in geoengineering.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

I think IPCC has been dominated by modelers and the same research groups. The participation should be completely open and the data must be accessible to anyone interested.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

None of the steps would have any worthwhile effect.

3. What is your opinion on the way in which the full range of scientific views is handled?

The full range of scientific views has not been handled by the IPCC.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments misuse the IPCC to misrepresent propaganda supporting policy choices as science.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

This is part of the scientific process that is an inappropriate activity for an intergovernmental political panel at the UN.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The role of uncertainty, as used by the panel so far, has been to buy more time when public opinion is not in their favor. Anyone who has followed developments knows that they express none if they believe public support is on their side, and push uncertainty when they don't.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Criminal.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

There is no honest reason for the media and the general public to take any notice of them. The IPCC should not exist and should not have any official standing anywhere. The essential improvement is to disband the IPCC.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Yes. Disband the IPCC. Scientific work should continue as it always has, within the scientific community. Science and politics do not mix. Politically driven science is not science. An additional improvement would result from a dramatic decrease in funding for so-called "climate science." This funding, in large amounts for hyped up nonsense, is diverting funds from worthwhile science. More money has obviously not sped up the increase in knowledge about climate.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Yes. Disband the IPCC. What sort of management are you expecting of an organization that has no legitimate purpose?

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

CLA, RE, LA, Contributing Author. Most work was done in WG II. Also, LA in a special report.

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

No. First I believe it is good that policy questions are under the control of politicians and science should not meddle with this. Secondly, I do not believe that this part, which is now mostly under the control of governments and/or policy makers, can be influenced in any way by this review. Governments will and want to stay basically in power and control, regardless of any other influence.

2b. Election of Bureau, including Working Group chairs

No, I see little need nor possibilities for any improvements (see also previous point).

2c. Selection of lead authors

No suggestions (also for reasons explained in previous point). Moreover, I believe as a scientist, it is good to stay out of these considerations and leave them to other experts. I was asked to let myself be nominated, but then never wanted to know anything about the actual election process. As a scientist I wish to be elected first of all for my scientific expertise. Any involvement into this process would be against my principles and I therefore know very little about this process and can basically offer no advice.

2d. Writing of working group reports

There are several possibilities from which I would expect some improvement of the writing process. Here just some points in addition to what I have proposed earlier this year to IPCC chair, secretariat, co-chairs and some other colleagues (see below point 11), containing further recommendations):

1) Coordination among working groups.

This needs improvement by establishing authors that serve as dedicated go-between authors and attend LA meetings of the other working group(s), at least partially. The duties of these go-between authors would be to coordinate across working groups. They would enhance consistency, spot gaps and weaknesses and would make proposals to chapter CLAs to ask particular scientists of their writing teams or from additional authors recruited from the outside to help other working groups as CAs. Their role would be at a similar level as the CLAs within the working groups. This is not merely a matter of cross-cutting issues, of coordination, or ensuring consistency, it is also a matter of supporting each other to strengthen the quality of work, notably the "other" report. Since, expertise is not equally distributed among authors, authors with special knowledge can relatively easily provide more support to colleagues who are not so familiar with the subject at hand. Of course, this is trivial, but reality shows that this is far from trivial to put into practice. Broad as well sound expertise is a considerable challenge for the regional chapters, in particular the ones covering developing regions, as demonstrably was the case for AR4. The infamous Himalaya mistake as well as the other writings raising debate were all in regional chapters, and the most questionable ones in chapters with responsible authors from developing countries. IMHO no coincidence. In such chapters CLAs have a humungous task of covering everything from climate physics to economics, a basically too difficult task, unless sufficient specialized expertise can be mobilized. We had such go-between groups while writing the SAR, but none while writing the AR4. I consider the often found attitude that working group I authors are the better scientists and therefore need not care about the other working groups not particularly helpful and being IMHO partially responsible for the criticism that has been lately raised against IPCC. Despite the difficulties to overcome prejudices, efforts need to be made to strengthen the mutual respect among working groups to the benefit of the entire IPCC work.

2) Supporting CLAs

I had first difficulties to get the support I needed from my university. Despite its wonderful library services, it was not always easy to keep up with the literature. The author team I was responsible for reviewed 3081 works. The big majority of those 3081 works being published since TAR and being peer reviewed articles or scientific books (879, 96%). I read all of those, fortunately not all were of high enough quality to require thorough study. To be able to focus on the reading, I needed some student assistant, who helped me to process the literature (maintain a data base under my guidance and download pdf's etc.). My government supported me fine, but not all scientists have sufficient understanding of how demanding the task of an IPCC CLA is. Since the literature will even become more abundant I believe it to be crucial that authors are well supported by their home institutions, a plea your review could perhaps make.

I know in particular that there are also serious difficulties that many developing country authors face, if their home institutions are not able to support them sufficiently, notably the access to the scientific literature. I had to send often articles to colleagues, notably African professors. Open access literature would be crucial to ameliorate the situation, but I fear this is too far reaching an issue to expect soon some improvements. Unfortunately this impedes IPCC report writing and I believe its significance in the past was not minor. The Himalaya mistake "nicely" illustrates this: Authors responded at some point that they would currently not have access to the literature mentioned by some reviewers. The risk is that within the humungous task regional chapter CLAs

face, such incidences are real and are likely to lessen the quality of the work.

3) To attract throughout top scientists as IPCC authors, IPCC reports should also enter the ISI WOS data base and each chapter should be assigned a doi. Springer does that for edited books, and I believe the same could be done with IPCC reports. I have suggested this already earlier to the IPCC secretariat. Only my idea of using a citation recommendations was observed in AR4 writing and publication. Unfortunately, ISI WOS is ignoring the IPCC reports. IPCC authors need to get the credit they deserve for doing top work, which means also that their contribution should be visible in the usual crediting of individual scientists. I believe this includes the ISI WOS citation index.

2e. Review processes

The review process could and should be improved by strengthening the role of review editors. The following points are meant in addition to what I have proposed earlier this year to IPCC chair, secretariat, co-chairs and some other colleagues (see below point 11), containing other recommendations I have been sending):

1) REs should not just supervise whether the authors deal properly with the comments, but should also have a say to the thoroughness of the review round. REs could accomplish this by suggesting reviewers, by discussing with authors more specifically the relevance of comments, notably statements that might be of SPM importance, and by evaluating the quality of a review round while it still can be influenced (see next point).

2) Reviewers should be asked to early commit themselves to actually do the review. TSU could then put a list together of committed reviewers and show this list to REs who could evaluate early on whether there could be expected a sufficient and well balanced review round. Otherwise there would still be some time to urge potential reviewers to additionally commit themselves. This would not affect the overall schedule very much, yet make high quality reviews more likely. The Himalaya mistake was as much a failure by the reviewers as it was a mistake by the responsible authors (BTW, I base this recommendation on my insights I gained studying the Himalaya mistake in detail).

(see my other recommendations under point 11)

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

It should become more of a true synthesis and not merely a copy and paste exercise from the SPMs of the three working groups. Notably go-between CLAs could play here an important, new role.

2g. Adoption of report by the IPCC plenary

No changes necessary. Allow me only this comment: It becomes more and more important that scientists' input is made regardless of policy consequences and politicians respect the independency of scientists. Policy relevance must not be confounded with policy prescription.

The big majority of policy makers knows that difference very well, yet this does not prevent some lobbyists from trying to influence scientists for political reasons. The difficulty is that some scientists don't understand this always that well and need to be encouraged to resist such influences and that they are most of all responsible to science and its rigor, regardless of the political consequences of their assessment.

2h. Preparation of any special reports

Same as I wrote above on full climate reports

3. What is your opinion on the way in which the full range of scientific views is handled?

IPCC authors and IPCC as a whole have handled this in the past very, very well!! For sure many, many orders of magnitude better than how allegations in public media want their audience to believe, in particular the blogosphere. I am fully aware of some of the allegations, some scientists such as Richard Lindzen, Martin Reiter, or John Christy are occasionally making in public. However, also knowing what these persons actually did within the IPCC writing of reports and knowing about their partly privileged role IPCC offered them, such statements appear to be in quite sharp contrast to reality. Any allegations of IPCC being biased, selective or even excluding actively "unwanted" authors are to my knowledge completely unfounded.

In my experience the so-called sceptics have always made strong, albeit not very effective efforts to influence the writing, either by lobbying for authorships or by submitting comments during review rounds. The latter attempts are politically motivated and do rarely adequately reflect the true scientific state-of-the-art understanding of a topic. This makes them generally easy to spot. No surprise IPCC authors have in the past resisted mostly successfully merely politically motivated attempts to influence the assessment, yet the attempts to gain influence are a reality and authors have to make efforts to keep politics and science separate. Poor criticism made by peers is treated similarly, yet often requires disproportionate efforts from the side of the authors. I have spent days and days responding carefully in writing to negligently and haphazardly formulated criticism jotted down in very little time by a few peers. Those are the IPCC rules!

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

With some notable exceptions governments play generally a very reasonable role in the preparation of reports. First they initiate the report preparation and enable the factual writing by financial support, notably for developing country authors (IPCC trust fund). Then they generally mobilize expertise within their own jurisdiction to review in the expert/government review round the drafts and may otherwise facilitate the writing by their authors, e.g. by paying for traveling expenses so that authors can meet. Finally they approve line by line the SPMs during a dedicated plenary session. The main purpose of the latter being that according to the rules of the UN all governments have agreed by consensus that (i) the SPM together with the underlying report properly reflects the current scientific understanding of the addressed topics and (ii) that all formulations were made with a language comprehensible and usable within the decision making context, notably that of the UNFCCC.

The debates evolving during the SPM approval plenary sessions are often misunderstood. Yes, they show regularly politically motivated interventions, but interventions that have little effect on the scientific content. Since the SPM must fully reflect what is written in the underlying report, the scientific investment made during years of elaborate preparation, can not be easily overthrown during such a plenary session at the end of this process. I am not aware of any such incidence where one could strongly argue that politics would have altered the science in any fundamental manner. Yes language, formats and sequences in which material is presented was influenced by plenary delegates, but not the actual scientific content. Moreover, in my experience government delegates are very sensitive to any policy prescriptive formulations and help also to weed any such language out, not the least during these plenary sessions. Thanks to the fresh view delegates have, they often excel scientists in this respect, who may have unintentionally chosen a politically too loaded formulation. Finally, the overall result is generally merely an improvement of the quality of the reports, because questioning the assessment from any perspective makes the scientific argumentation generally more clear and more sound. There are very few exceptions to this, but I see little possibilities for preventing these. My recommendation is not to directly try to prevent the exceptions proving the rule. Preferable may be to simply stress, protect, and preserve the traditionally strong role of the scientists.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Comprehensiveness and use of non-peer-reviewed literature are two rather distinct issues I would prefer not to mix too much.

First, comprehensiveness has become more and more of a challenge, since the scientific literature is growing exponentially. Having personally experienced as CLA during SAR vs. AR4 preparation, by how much the literature has grown, the challenge is only growing. Yet, in my experience it is a doable task and it is also a rewarding task. I enjoyed learning so much about other ecosystems, which are normally not in my focus in today's highly specialized scientific research. As an experienced scientists I find it rather easy to judge when you have covered comprehensively the literature or not. What is also a fact is that many colleagues draw your attention to important literature continuously. The only real issue I see is the need to help authors from developing countries. But again, that can be relatively easily accomplished if adequate assistance is available to the authors, notably the CLAs.

If this question tries also to address the possibility that some "heretic" literature would not be covered by IPCC assessments, I see absolutely no grounds for this criticism, albeit regularly heard in the blogosphere. In my experience IPCC authors succeed generally very well in covering the entire spectrum of ideas and scientific findings. Moreover, IPCC authors were always advised to represent any controversially discussed topic as an unresolved or simply controversial issue. I see therefore very little ground for accusing IPCC to reach superficial, unjustified consensus. In this context I find also the uncertainty guidance mostly developed by WG II since SAR very helpful and useful. I highly commend its use for the preparation of future reports by all three working groups in a consistent and thorough manner.

The use of grey literature is unavoidable and requires to be done, in order to achieve a really comprehensive assessment of current understanding of climate change. Then it needs also to be cited. What does it help to base some assessment only on peer reviewed literature, while some widely read and respected grey literature would draw opposite conclusions and authors would not have bothered to assess this situation? Policy makers would be completely at a loss and would immediately need a new, more comprehensive assessment. Authors should not be plagued by unnecessary rules on the use or non-use of literature. However, authors need to be asked to always document fully any used grey literature or preprints to enable reviewers to do their task well.

However, to derive critical conclusions only from non-peer reviewed literature appears to me to be unacceptable. A careful balance needs to be struck, again to be done by the responsible authors. They have to assess the quality of all relevant literature. I find the latter quite relevant, since an increasing fraction of the peer-reviewed literature is of a rather poor quality, while some non-peer reviewed grey literature is often not only quite interesting, but occasionally surprisingly sound and of an impressive high quality. IPCC Authors have to carefully judge and assess the reliability and robustness of scientific findings, be open-minded by including other sources as well, and must not "blindly trust" only the peer-reviewed literature.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Extant uncertainty guidance seems to me to be very useful and should not be changed, but rather authors advised and encouraged to make good use of it. Some scientific communities, notably that of WG I, tend sometimes to emphasize a too narrow view, i.e. only a probabilistic interpretation of uncertainty. This is generally not appropriate and all WGs should make use of the entire spectrum of uncertainty assessments as appropriate, i.e. as contained in guidance used for AR4.

WGII has a strong tradition in dealing with uncertainty in a differentiated manner. Other WGs could try to profit more from this experience.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

First quality control has to happen during the writing. Strengthening the thoroughness of all processes, including reviews (point 2e), as I have described above under several points should generally further quality and assure it at a high level.

Identification and rectification of possible errors discovered only after publication represents a considerable weakness of IPCC, notably during the time when TSUs are being disbanded. This clearly calls for improvements. I have proposed earlier this year very concrete measures to address these issues and sent my suggestions to IPCC chair, secretariat, co-chairs and some other colleagues (please see below point 11).

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

IPCC secretariat has generally done a good job in organizing communication with media by enabling and assisting authors to get in touch with journalists and the general public. Perhaps, the capacities by the secretariat are too limited in dealing with all tasks arising in this context. Yet, I like the secretariat to remain as lean as possible (but see also previous point and my recommendations on slightly improving the secretariat's capacity to respond always adequately).

Concerning the role of authors I see little possibilities to improve the situation except for offering some guidance and basic rules to scientist on how to deal with media, who may otherwise encounter unsatisfactorily experiences when inexperienced. I envisage something similar to what was recently offered by current WGII co-chair to WGII authors. These rules mean also that individual authors may not speak on behalf of the IPCC unless explicitly entitled by some IPCC body and that in public IPCC authors should always make efforts to clearly and explicitly separate scientific findings as assessed by IPCC from politically loaded statements.

Asking for considerably more engagement in communication is also quite a slippery slope, since particular formulations as produced by IPCC authors are to be taken literally or one risks to distort intended meanings. I therefore would be very hesitant to require IPCC bodies, e.g. the secretariat, to enhance its mandate in this area. To professionalize its current mandate by having all needed resources really allocated is not what I am arguing against. What I see as risky would be to widen its role in communication and dissemination. Again scientist should here have the lead and the main responsibility.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Sustainability depends also on the reward participants get out of the process. Therefore one has to be careful not to over-regulate authors. With the recent criticism IPCC had to face, scientists could be scared off to participate, unless well protected from unfair attacks. Scientists need most of all sufficient scientific freedom to do their job. In the past IPCC authors have written the reports on a voluntary basis. This should remain so and if sufficient assistance and credit is given to authors (see previous recommendations) I believe the work as IPCC author and/or review editor should remain most rewarding. On such a basis I expect the IPCC assessment model to be sustainable.

I see basically no possibilities for an alternative process. I have also been involved as CLA in similar attempts (SCOPE or recently, Global Forest Expert Panels, <http://www.iufro.org/science/gfep/>) and found only that the IPCC model is of an admirably considerate nature and sophistication, that many organizations would only hope to be able to copy. IMHO switching to an alternative model, as also suggested by some voices (e.g. Anonymous, 2010, notably Mike Hulme), disregard the accumulated experience and the considerable difficulties to do it better and the years needed to develop such capacities as a global community. All my suggestions for improvements are in my understanding merely the polishing of an already shiny surface (except last argument I made under point 7).

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Yes. Sufficient IT personnel that can support the writing process and some more systematic means of assisting authors in their writing task and review editors in their overseeing of the review process, e.g. by their governments or their home institutions such as universities. This includes use of reference management software, preparation of preprint and grey literature repositories that greatly help reviewers do their job, providing revision tracking systems that assist review editors, cross-checking of content among chapters and working groups and other technical editing works.

11. Any other comments

This is unmodified what I have proposed earlier this year to IPCC chair, secretariat, co-chairs and some other colleagues:

I see following possibilities to improve on IPCC procedures for preparing reports:

(i) If any mistake is brought to the attention of IPCC after completion of a report, procedures are needed to investigate and correct. In such a situation a process needs to be launched to investigate whether any key statements may be affected, the relevance of the mistake needs to be assessed in detail and if a decision is reached that an errata is necessary that should be published as swiftly as possible. I have studied the Himalaya mistake quite in detail and it appears to me that such a proper process was missing. AFAIK the mistake was only brought to the attention of the TSU and some IPCC authors after the report was completed. At that time IPCC was in a phase where TSU as well as lead author teams were disbanding. I believe that the secretariat in Geneva needs to get involved in such a case and that some track keeping is done. The secretariat also needs proper means to handle such cases, including the involvement of previous authors and independent experts serving as stand-by experts to help out in phases between the writing of two reports.

(ii) IPCC could develop more stringent instructions for authors how to deal with various categories of comments. I suggest 3 categories: (i) potential SPM relevance; (ii) not quite SPM relevant, nevertheless of critical importance; (iii) all other comments. Distinguishing among these categories of comments would allow to establish some rules e.g. when to get the entire author team involved, when to get review editors involved, when to get authors from other working groups involved, or when to ask for advice from additional outside experts. For instance any comment that makes a reference to the SPM (Japanese comment G-10-120) is of a different category than merely editorial comments, such as "a comma has been forgotten somewhere". TSU supported by a particular software system (see above) could help to highlight critical comments needing special treatment.

(iii) Cross-WG go-between authors need to be designated from the very beginning and they need to be systematically supported to improve on the consistency among WGs, e.g. by allocating in the schedule proper time to accomplish their task, e.g. by adding a day to the LA meetings where CLAs meet with these go-between WG authors. These among WG coordinating authors could

also highlight consistency and other critical issues and draw the attention of the CLAs to them, so that better cooperation among WGs results.

(iv) Review editors need more help to do their task, since I believe they also could have picked up this issue. I have also served as a review editor, but know if you have to deal with thousands of comments keeping track whether authors have properly dealt with ALL comments in detail is very difficult. I could think here of measures that assist review editors in keeping track of how exactly authors responded to comments. Special software could be developed to keep track of chapter versions together with the reviewer's comments and author's responses. This support should be targeted at enabling review editors to focus on critical comments (first two categories, see above).

(v) Reviewers should be reminded that they need to give a rationale if their comment is a mere request such as "delete". Actually such comments are not of much value and TSU as well as other staff, e.g. those helping the review editors, might request clarification from that particular reviewer. This would reduce the risk of misinterpreting a perhaps important comment as "Irrelevant editorial comment" only as this was the case in the Himalaya incident. As authors normally do neither have the necessary contact information nor the time to chase down all individual reviewers.

(vi) Authors from all WGs should have time (or otherwise enabling support) to read relevant sections in other WGs. In particular WGI authors should read and respect other WGs work much more than what they have been doing in the past. You can clearly see that WGII and WG III authors reference WGI chapters much more than vice versa, I fear not only because of the preparation sequence. For instance, my concrete suggestions to cross-reference our works was declined during AR4 preparation for reasons that could be avoided in future report preparation if appropriate measures are taken to strengthen cross-WG work.

Final comments:

Note, above suggestions address only issues related to the preparation of IPCC reports and my comments have no bearing on possibly also needed improvements in other areas such as how to deal with possible conflicts of interest by persons holding an IPCC office.

I am clearly of the opinion that It's not the job of the chair or the vice-chairs to supervise every detail that is written in the reports. It is first of all the job of the authors and reviewers and authors serving as reviewers including the review editors to ensure all reviewing is done with utmost rigor.

I strongly believe that existing and previously used rules and modalities to prepare reports are sound and have proven in general to yield very high quality results. The cases now discussed are clearly overstated and given a significance that is way out of proportion. Even the only clear-cut case, i.e. the Himalaya blunder where clearly IPCC rules were violated, the incidence could have most likely be avoided even without any changes in rules as suggested above. All what would have been needed is more IPCC authors, in particular from WG I, more thoroughly reviewing that Himalaya section.

And let's not forget the perfect can be the enemy of the good! ;-)

Cited References (in all points):

Anonymous, 2010. IPCC: cherish it, tweak it or scrap it?. Nature, 463(7282): 730-732.
<http://dx.doi.org/10.1038/463730a> An267

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Lead author, review editor

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

This is currently done in a workshop with an ad-hoc selection of scientists. This might be made more transparent, possibly in the context of a larger conference, and a circulation of the draft scoping document for comments in a wide scientific and policy maker community.

2b. Election of Bureau, including Working Group chairs

This is currently not done very transparently. I suggest that this is done in the future by some inter-academy council and not by the UN, in order to keep it in the scientific realm.

2c. Selection of lead authors

I support the present system: Nominations from the different nations but selection of the writing teams by the WG chairs. It is important to have flexibility for the WG chairs to form efficient writing teams.

2d. Writing of working group reports

The present system suffers by the strict and very tight time schedules. Given the fact that lead authors typically have many other obligations as professors, lab directors or research scientists, it is important that there is enough time available for the writing of the chapters, but also for the reviews and the time for responding to the reviews. While deadlines are probably needed, there should be a mechanism to change these, in case problems arise. E.g. a controversy on some issue can arise from new papers or based on a constructive review comment, which might require more time to investigate and assess.

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

I do not think that the present operation of IPCC does in any way biases the assessment of the scientific views. The review process including the review editors makes sure that all opinions are adequately represented (at least in WGI).

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Not negligible, but small.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

I believe that the current practice, at least in WGI is sound.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

This is an important issue that needs to be more strictly adhered to, in order that a uniform terminology is used consistently throughout the documents.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

As with any encyclopedia, IPCC should publish regular “errata sheets” periodically when needed. Errors could be better incorporated into minor updates of the reports if the assessments were performed according to the “living reviews” model. (see below).

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The current model to produce a complete report every 5-7 years is very time consuming and also partly repetitious. In each new assessment the new writing teams have to reinvent the wheel in

the way the chapter's topic is presented. An alternative operational model could be the "living reviews" model (<http://www.livingreviews.org/>) with placing the WG reports online. An editorial board, similar to the lead authors or convening lead authors decide periodically which chapters have to be updated or rewritten. New emerging topics can be added easily, and the time interval for minor or major updates can vary between the different chapters. Only the technical summaries and the summary for policymakers would have to be rewritten periodically according to the demands from the plenary. With this scheme the authoritative information as assessed by the editorial board and the writing teams would always be up to date.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

More scenario analysis of mitigation pathways presenting and comparing alternative courses of action (policies, technologies) and their implications - e.g. along a standardized criteria catalogue - would be helpful to inform the public and policymakers about the consequences of certain actions.

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

In my perception a wide range of perspectives is taken into account.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Government participation is important to ensure that a shared political-level perception of climate change causes, consequences and policy pathways is created. This is a vital prerequisite for mutually beneficial international collective action.

It is vital, though, to separate direct influence on text in the main text from the SPMs to avoid influence on academic questions.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Maintain a homepage where authors respond to significant challenges of the validity of findings.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

IPCC should embrace the fact that science produces fallible truths, that is a learning institution, and that is creating internal procedures which reflect this.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I think the exercise is of immense value, but a way needs to be found to represent concurring worldviews within the reports esp. in mitigation sections - the model of unanimity applied in the natural sciences is not apt for the social sciences including economics.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

It appears to be desirable to have more UN funding available e.g. to make location of TSUs independent of government financing.

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Expert reviewer for a Special Report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

In my opinion the quality of writing in the zero, first, and at times even second order draft is low. Perhaps this is a problem of incentives. Since all authors are listed collectively at the beginning of each chapter, the author's incentive to deliver good quality for his/her individual sub-section is low. In this setting, good quality is a public good, giving rise to free-rider effects. Maybe it would help to state the names of the responsible authors at the beginning of each sub-section, giving sub-section contributors a reputational incentive to deliver better quality.

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

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9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions

for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Participant in an IPCC expert workshop

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

clearer research or focus questions should be defined by governments and/or policy.

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

very intransparent process. A clear quota for women should be introduced.

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

Special Reports are a good possibility to be up to date and not just to publish something every 7 years.

3. What is your opinion on the way in which the full range of scientific views is handled?

ok

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments should give the direction for the assessment and the research questions. The IPCC and the scientific community should then assess these issues and feed it back into the policy process.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

grey literature is of absolute importance, given e.g. the fast development of some technologies. Also for the contribution of scientists from developing countries the possibility to include grey literature is of importance. But the regularities should be clear.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

ok

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The IPCC should have a stronger mandate to perform an own assessment. So far e.g. the scenario process got stuck as the community only makes slow progress. But a consistent scenario process is needed for a proper assessment within the AR5. So the IPCC should have the mandate not only to review and put together new scientific findings, but also to structure an assessment along research foci and political relevant questions.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

In general: more transparency on the basis of the chosen CLAs, LAs, etc is required. Moreover, this kind of structure does not seem to be appropriate for involving more women (perhaps because the IPCC is done at the weekends and in the evenings?). This should be elaborated.

Good luck with AR5

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Nominated but not chosen as author

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

in principle the most things went quite well, but IPCC should avoid stick to their core fields of expertise

3. What is your opinion on the way in which the full range of scientific views is handled?

quite good, but some representative of the IPCC need media training, because in such a large report it is unavoidable the minor errors can occur. The crisis handling after the "glacier issues" was not professional enough. We have to come to more comparable results, in particular with regard to the statements related to vulnerability and adaptation.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

It plays an to important role, but IPCC should not try to solve all the problems of the world. Du to that fact the we step very detailed into adaption and vulnerability assessment for example we are touching political issues. Therefore we have to deal with responses from this community.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

non peer-revied literature should not considered, even by applying such a strict measure it can be the case the second class journal become quoted. But concerning the recent sitaution such a stricht rule is necessary

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I think the whole report needs a common understanding of uncertainty. Due to fact the the report is mainly prepared for policy advice the stakeholders do not understand the different concepts of uncertainty used. But we should also made clear how the results have to be interpreted in a policy context, because in comparison to other areas of research, we have for several fields a sound scientific basis. Nevertheless policy science interface needs to be broaden and mutual learning of both communities

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Can be definitely improved. My feeling was that the responsible people were a bit astonished about the public echoes. This has to do with the fact the scientist are not so familiar to deal with media

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

media training

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

transparent and well selected and independent review panels, as it was done for the writers

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

none

11. Any other comments

none

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

I have written and opposed their claim that biofuels reduces CO2. In 99% of the cases, biofuels increase the release of CO2.

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

- 2a. Scoping and identification of policy questions*
- 2b. Election of Bureau, including Working Group chairs*
- 2c. Selection of lead authors*
- 2d. Writing of working group reports*
- 2e. Review processes*
- 2f. Preparation of the Synthesis report, including the Summary for Policy Makers*
- 2g. Adoption of report by the IPCC plenary*
- 2h. Preparation of any special reports*

a. and h.

3. What is your opinion on the way in which the full range of scientific views is handled?

Relatively poor

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

They have not investigated the report carefully.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

IPPC needs to request inputs from a wide array of scientists.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The uncertainty needs to be spelled out.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Not very good.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Disappointing

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

Need breadth.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Need to reach out to all.

11. Any other comments

None

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Reviewer for a Special Report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

At least in Working Group 3, use of non-peer-reviewed literature is definitely necessary. However, it might be possible to make the distinction more transparent by using a different layout for quoting peer-review and non-pr references, e.g., the numbers for npr might be written in bold or italics.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

7. What is your view of how IPCC handles data quality assurance and quality control and

identification and rectification of errors, including those discovered after publication?

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Not too well. There should be more (wo)manpower to handle the communication. In my personal perception, most official media contact and coordination of communication strategy has to go through one person in Geneva! This is not adequate for an organization with the size and importance of the IPCC. It is necessary to greatly increase the number of communication experts directly controlled and paid by the IPCC.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

strenght

2b. Election of Bureau, including Working Group chairs

weakness - this system should be more flexible/open

2c. Selection of lead authors

2d. Writing of working group reports

strenght

2e. Review processes

strenght

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

weakness - too much external influence on final report

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

there is too much influence of Governments on the entire process

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

peer-reviews are NOT perfect, a fact we often neglect. Nevertheless, I do not know a better way to handle/quality control information. Information from grey literature should be assigned as such.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

try to differentiate between Scenarios, Model Uncertainties and "real" Uncertainties

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

data quality assurance and quality control seems to be O.K. to me, rectification of errors needs too much time - the IPCC structure should be more flexible in this point.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Reviewer

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

all steps generally well organised. Addition of a step for coordination of contents across chapters would be helpful

3. What is your opinion on the way in which the full range of scientific views is handled?

appropriate

may be a system of tags for types of sources can further enhance transparency

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

positive. Engagement of governments by approval is important although only a minor step on the road to action

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

see 3.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

applied approach is good. I recommend to strengthen identification and communication of issues/aspects that were not yet studied and of uncertainties related to model structures / data analysis approaches applied

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

ok

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

well done

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

no

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

no

11. Any other comments

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Contributing author, Expert reviewer, Member of government delegation at IPCC-plenaries

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

A robust process involving both scientists and gov

2b. Election of Bureau, including Working Group chairs

More time is needed to see presentations of candidates, IPCC-secretariat should provide CVs etc in advance to parties

WG-chairs should be selected based on scientific excellence (especially for industrialized countries ICs), management and communication and team working skills

2c. Selection of lead authors

In principle a very good process, especially geographical balance is important for political acceptance of the report.

Consistent methodology/criteria should be applied across WGs.

Scientific excellence based on publication record for WG1, but difficult for WG2/3 (expert judgements), -- include/count peer-reviewed of non-English literature.

Rotation of C/LAs after 2 reports, they should become REs.

2d. Writing of working group reports

In the four previous reports of several thousands of pages only a few mistakes have been found. This is an amazing result, given the fact that all contributors work on voluntary basis, IPCC-reports are of very high-quality.

However, to further improve its quality, IPCC could further ensure that its rules of procedures are carefully applied through an additional quality check. This might involve independent proof reading and a test for particularly controversial conclusions or conclusions having significant implications. This will likely require additional funding.

IPCC should ensure that all references have been checked, possibly hiring professional expert reviewers, before the final draft is distributed

IPCC could condense the assessment report by imposing stricter page limits per chapter.

Topics that occur in more than one Working Group report could be cross-checked by the authors of the relevant texts in order to avoid real or perceived discrepancies.

2e. Review processes

Participation of both governments and scientists in the comprehensive review process ensures the high scientific quality and the acceptance by policy makers.

The IPCC rules for the review process including those dealing with grey literature should be applied even more carefully.

include professional reviewer checking numbers and references and formalities

IPCC could ensure that the comments made by experts in the review are kept anonymous to prevent a bias in the judgment of comments.

The responses to the comments should be put on the IPCC website immediately after the lead author meetings where these were dealt with.

REs should be senior scientists, IPCC-experiences or other assessments. IPCC should provide better guidance to Review Editors and review their role. It should be clarified if they should continue to only check whether comments have been adequately addressed as they do at the moment, or if they should also check the correctness of the text.

IPCC should increase the number of Review Editors where useful to provide the capacity needed (at least 4 REs per chapter).

The visibility of and credit for REs should be increased, REs to participate in SPM-approval sessions, - Cross-chapter and cross-working group reviews should be established to ensure consistency of the reports.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Only material published in the underlying reports can be used in the SPMs and SYR. This limits the influence of policy maker and should be better explained to the public.

A strategy should be developed improving the existing rules that prevent scientific content from the WG-reports to be “filtered” for the SPMs by policy makers in ways that do not fully reflect the original information

IPCC could develop a strategy to run the panel discussions for approval of the SPMs more efficiently

2g. Adoption of report by the IPCC plenary

no comment

2h. Preparation of any special reports

no comment

3. What is your opinion on the way in which the full range of scientific views is handled?

The full range of scientific views is represented in the reports through the contributions of many scientists all over the world.

IPCC does not report scientific consensus if there is none. The full range of views and the uncertainty of the statement should be clearly portrayed, also in the SPMs, in a consistent way.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

UNFCCC, i.e. policy makers and governments are the main customer/client of IPCC

The role of governments is appropriate, but the communication on their role/function/limits of influence should be communicated better to media/public

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The use of gray literature cannot be avoided in WG2 and 3, as many of the sources are not peer-reviewed, but still high quality (e.g. reports of EEA)

The IPCC rules for the review process including those dealing with grey literature should be applied more carefully.

References in the text to grey literature should be recognizable as grey, so that reviewers are alerted that the source is not peer reviewed. Peer reviewed and non-peer reviewed sources should be listed in separate sections in the list of references.

Gray literature must also be highlighted in the SPMs

IPCC should define more clearly various categories of grey literature and formulate rules on the conditions to use each of the categories. [e.g. according to their sources: government reports, internat. organisations, NGOs, etc.]

Where possible reference should be made to original papers, especially those that are peer reviewed, rather than to reports where they are quoted.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The procedure by which likelihood and confidence qualifications are established for statements in the IPCC reports should become fully transparent, argumentation for the judgment should be documented and should be available to reviewers and the public

A clear language on different types of uncertainty (statistical, expert judgement, level of confidence) should be applied consistently across WGs as far as possible.

The full range of views and the uncertainty of the statement should be clearly portrayed, also in the SPMs, in a consistent way.

A chapter on “Robust findings, key uncertainties” should be included in each summary for policy makers, also making the full range of views in existing scientific literature explicit.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Procedures on how to deal with errors after publication should be developed, especially for errors in parts of the reports that need approval of the plenary.

IPCC should adopt procedures to assist in the identification of errors after publication by the users of its reports and to correct these errors.

A web page to report errors could be part of these procedures.

Publication of error on the IPCC website within a determined period after discovery, together with a statement if the error has a high profile.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Communication should emphasize and be compliant to the mantra “Policy-relevant, but not policy-prescriptive”

IPCC-work and -procedures should be made more transparent to the public

The IPCC bureau should develop a clear strategy for strengthening external outreach and communication (Improve the communication of the full range of views and of the existing uncertainty to the media and the general public, IPCC should deliver consistent/coherent messages from all bureau members, Increase trust as perception replaces substance for many people, Develop a communication strategy responding to perceived and real mistakes)

WG-chairs should be aware of their role, that they are not acting as scientists but as public representatives of the IPCC

The IPCC-secretariat should hire a professional communicator

Professional media and communication training should be provided for bureau members and heads in secretariat/TSUs

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The hybrid character of mixed involvement of policy makers and scientists is a very good model –being copied for other areas – now recently for biodiversity IPBES.

It is a very successful model that should be kept.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The high quality of IPCC is expensive; the importance of IPCC is not reflected in its funding. Funding has to be increased and become sustainable, IPCC cannot rely on trust fund only any more.

An update of the rules and procedures could make very clear the role of TSUs, bureaus of WGs and chairs of WGs, i.e. the organizational units with the main responsibilities for implementation of IPCC rules and procedures in the Working Groups.

IPCC could develop rules to guarantee impartiality and integrity of IPCC

IPCC could adopt a code of conduct for bureau members (including the Chair, Working groups and TFI) prescribing that they abstain from policy prescriptive statements in public and towards the media. This would help to keep appropriate distance between science and policy.

CLAs and bureau members, in particular the IPCC-chair should show how they can afford living during IPCC to avoid conflicts of interest.

Ethical conduct for authors and reviewers of the IPCC that they agree with the terms and conditions of the work of the IPCC laid out in its procedures.

Official establishment of the Executive Team

A clear Mandate for function or person officially operating within the IPCC

11. Any other comments

In general the IPCC has done a tremendous work in the past, providing a solid scientific basis for policy makers, accepted both nationally and internationally. The few errors in AR4/WG2 do not at all undermine any of the key findings on climate change. However, the debate has been exaggerated by the media, misinformation and attacks against the IPCC have occurred in some countries (probably funded by lobby groups). Climate change is high on the political agenda and IPCC-reports are becoming increasingly important of policy makers. IPCC is not a political body; it is not constructed to act in a political arena. The mandate of IPCC should be clearly communicated to the public ("policy-relevant, but not policy-prescriptive") by all members of IPCC including the IPCC-chair.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Contributing author. Also Reviewer for a special report

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

works well

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

b., c. ok

2d. Writing of working group reports

in WG1 this is very well organized. What I am missing is communication about the findings in the broader scientific community before the first formal review. This could help to identify inconsistencies among WGs and potentially identify unresolved issues. Something like a national IPCC conference could help, although this may be difficult to organize in less developed countries.

2e. Review processes

generally sound and robust

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

f.-h. ok

3. What is your opinion on the way in which the full range of scientific views is handled?

Mostly fair, but the process does rely on the lead authors' constant scrutinizing and their assessment of the reliability of information.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Firstly helpful in the sense that they force the involved scientists to formulate carefully. However, it must be ensured that policy doesn't dispute solid scientific findings. Concerning mitigation and adaptation options I see greater danger of unwelcome political influence, but also higher demands on forthcoming reports to discuss various strategies and their effectiveness, but also include potential side effects (e.g. climate-air quality, climate-water resources, standard of living, ...).

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

There should be a central and publically accessible archive of non peer-reviewed literature. In rare cases, where material simply cannot be published (classified material or similar), there should be a formal process to register such documents in the citation tree. For these documents access must be granted to a minimum number of scientists from a minimum number of countries and at least one "neutral" person, e.g. from the bureau.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Generally very sound (at least in WG1). Perhaps there should be a somewhat broader discussion of uncertainties that cannot be formalized. Example: major volcanic eruptions are not part of the scenario calculations, but they could significantly alter the climate trajectory. While this has been discussed in the WG1 chapters, these kind of uncertainties don't appear in the impact and risk assessment.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

This could be improved. For example: in spite of the public discussion of the few identified errors in AR4, the errata pages for the individual AR4 reports contain only small technical corrections.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The first reactions after the identification of errors were disastrous. It should have been stated very early that the errors identified are only two facts out of several thousands, and that the main conclusions of AR4 had not been affected at all. IPCC should be more prepared to explain and defend the process but not deny potential errors. If the errata pages were better visible and kept, one could easily refer to them and deflect a lot of unjust criticism.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

I get the feeling that updates every six years would not require an entire new report, because for many scientists involved after the report is before the report and it may be good to have some more time for consolidation of new science in between. Thus, AR6 could for example produce much briefer update reports focusing on new findings with respect to AR5, and AR7 could then be another full report cycle.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

National support to the IPCC process appears to be rather variable. Some financial support to lead authors could perhaps help to ease the burden somewhat. Governments should be encouraged to fund research programmes producing to IPCC-relevant results.

11. Any other comments

All in all, the IPCC process is running extraordinarily well in light of the complexity of the science and the conflicting interest groups. Top priority should be to keep this process going and to ensure high standing of the IPCC management and all contributing scientists.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

Bam! A problem right off the bat! What about if we take "policy questions" right out of the IPCC process, so that the climate scientists don't have to be (or feel) hamstrung by government policymakers?

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

Take industry scientists completely out of the writing process.

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

The Technical Reports should stand as the IPCC's reports to the public. What policymakers then do with these reports is up to them, but the public will not have the policymakers' biases and filter confusing them about the science and the seriousness of this crisis.

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

"Full range" is simply euphemism for "should we let the denialists and so-called skeptics have a say in the IPCC?" If these people want to have their scientific views "handled" by the IPCC, then they should be getting their *research* (versus their opinions and obfuscations) published in reputable and peer-reviewed journals, like the other scientists who make up the IPCC. Perhaps full financial disclosure should be part of the process of determining whose voices *and research* make up the IPCC.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Don't get me going on this one!! The IPCC might be intergovernmental, but it should be completely free of governmental influence and interference. That any government can veto any word in the Summary for Policymakers is, frankly, disgusting politics.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Well, we all now know that the IPCC needs at least one watchdog to ensure that every included is peer reviewed. The denialists and so-called skeptics can't scream bloody murder about non-peer-reviewed literature making its way into the IPCC and then expect their own non-reputably peer-reviewed publications to be included.

Is there a general call for peer-reviewed papers to be submitted? If not, perhaps a general call would quell the complaints that not everyone's voice is included. Lead authors and half their working group members can then do a blind read (no author names visible) of everything that comes in. If something looks like bad science, poorly done research, or opinion and not research at all, then it can be excluded. All the excluded papers can then be vetted a second time (again, blind) by the second half of each working group.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Sheesh, if the IPCC becomes any more honest about the uncertainty, no one in the public who is scientifically illiterate will stand a chance of understanding the climate change crisis. Perhaps a clear distinction can be made between climate model predictions (and their uncertainty) and on-the-ground field research findings that have zero uncertainty.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

I've been impressed. To me, the point isn't whether every last detail in the Assessment is absolutely correct, but what the whole of the report tells us.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I'm impressed at publication time, but wish the IPCC communicated more with the public in between assessments.

I reiterate my suggestion to separate the scientists and their work from the policymakers and their influence. This is what confuses the public. The science seems serious and urgent ... the policymakers make it seem as unurgent as possible (which must really frustrate the scientists ... see below on sustainability!)

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

A Global People's Panel on Climate Change could report two years after an IPCC assessment is published.

The IPCC does not allow the scientists to say what they really know, think, believe and feel. There's an expression: "If it ain't fun, it ain't sustainable." In this case, if the scientists can't be human, the process isn't going to be sustainable. Why not allow *them* to have a section that is just scientists speaking as human beings? This could also respond to concerns that the IPCC is too conservative, too reticent to express the truth of the crisis.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

I don't know enough about it.

11. Any other comments

Yes.

1. More focus on agriculture/food security, please.
2. Please, use consistent baselines, such as 1900 or 1990 or 2000 or 2005, instead of leaving it up to the reader to notice that the baseline changes from one graph to the next.
3. I believe that the IPCC could be much more effective and useful, much more streamlined and efficient, and much more humane if (as the UNFCCC ought to do, as well) they concentrated only on the most climate-change-vulnerable nations, populations (human or otherwise) and regions. It doesn't matter who *isn't* going to be impacted hard or soon if there are species and places that are already being impacted, or will be soon.
4. Also (and this is related), the IPCC should focus on risk assessment, risk being probability times magnitude. If this means that the IPCC should include epidemiologists and others who understand risk assessment, then so be it. Get them on board. Explain risk to the public.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Expert reviewer. Below I focus mainly on the model literature, the model diagnostic literature, and updates of climate data which may have significant implications for the skill of models "validated" against erroneous data.

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

Lead authors should be selected from outside the fields they are reviewing, since even though the science has been progressing, they have been hesitant to consider that better science can result in less confidence, not just greater confidence. It was appalling to see claims of more confidence in the FAR than in the TAR, even though the Mann hockey stick had been debunked and much better diagnostic documentation of the diagnostic problems of the models were available. How can we have been more confident in the FAR when due to considerable progress in the science, we know that at the time of the TAR we had the unjustified confidence equivalence of the village idiot.

2d. Writing of working group reports

2e. Review processes

The review processes should enforce more open and complete responses, and should allow another round of criticism of those responses, and all should be open and published. Too many critical issues and problems were just summarily or cursorily dismissed by the authors with responses that often were not on point.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

The synthesis reports and summaries failed to carry forward uncertainties, and reported projections based upon models known to have correlated error larger than the phenomena of interest. Model based projections and attributions should not have been in the syntheses and summaries, since they were known to not yet have the skill for such uses. Since the progress in model science and results were still only of academic interest they should have been reported as such in the group reports and not yet considered for the summaries.

The IPCC should avoid obscuring issues by arbitrarily conflating anthropogenic aerosols and greenhouse gas forcings and separately from a conflation of natural solar and volcanic forcings.

The large acknowledged uncertainty in past anthropogenic aerosol forcing, which may never be resolved, confounds attribution to both the competing solar and anthropogenic GHG hypotheses as well as the coincidence of the positive phases of the PDO and NAO.

In areas where the science is still unsettled, such as the key issue of whether the net feedback to CO₂ forcing are negative or positive and thus significant relative to natural variation, no conclusion should be reached in the summaries, instead the state of the science and the data and research needed to improve our understanding should be summarized.

Transcripts and recordings of the synthesis and summary discussions and emails should be openly published.

2g. Adoption of report by the IPCC plenary

Transcripts of the debate and adoption process should be published. Multiple minority reports should also be allowed since there are often more than just two positions on any disputes.

2h. Preparation of any special reports

3. What is your opinion on the way in which the full range of scientific views is handled?

Usually troublesome or contrary views are summarily dismissed and while the referenced articles may be mentioned, their implications for the uncertainty of the final conclusions are not discussed or are buried.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The governments are failing to insist open and full disclosure of data, working communications and uncertainties.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Since peer review in several areas of climate science is too deferentially collegial and uncritical, non-peer-reviewed literature should be surveyed so that concerns and criticisms of the results that failed to be addressed in the peer review literature can be summarized and specifically addressed in the group reports. However, care should be taken that non-peer review literature should not be accepted as a source for data or conclusions.

References to publication of regional or global model based results which fail to discuss and report the implications of known diagnostic issues with the models for the uncertainty of the results should be avoided or their results discounted. Similarly, publications reporting "new" improved models or model versions which don't which model diagnostic issues previously

documented in the model family have been improved or unchanged or are known to be correlated among all previous models should be avoided or discounted.

Announcement that the IPCC will adhere to these standards will assist in reforming areas of the science where the quality of peer review has been inadequate for IPCC purposes.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The WG1 and WG2 reports and all derived summaries and syntheses uncritically reported model results without disclosing the documented diagnostic issues and without discounting the model results or increasing the range of uncertainty for the reported results. Given the documented correlated error available at the time (e.g. Roesch), the assumption that the models likely bracketed the climate was unconscionable.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

The IPCC needs to get better at admitting past errors and retracting or disavowing past excessive claims of confidence, so that current claims of confidence can be put in proper perspective.

When errors are discovered after publication, the IPCC should acknowledge them. The IPCC should avoid the mistake of reaffirming other conclusions unaffected by the error without a review of the literature published in the years since the previous report. For instance, there have been many publications of results raising more correlated diagnostic issues with the models such as those by Wentz, Camp and Tung, Lean, Lindzen and Spencer.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The IPCC over simplifies the issues and understates or fails to disclose the uncertainties and claims confidence that is unjustified, since the core issue is unresolved, whether net feedback to CO₂ forcing is negative or moderately positive or as positive as in the models.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The IPCC process is not peer reviewed. It can be improved by demanding that the authors be more responsive to expert reviewer comments and allowing follow up from expert reviews to the responses in an openly published process.

The IPCC should also be more critical of the available peer review literature, since it is failing to provide the IPCC with critical assessments of the uncertainties. The IPCC should not be having to synthesize its own estimates of the uncertainties raised by the model diagnostic literature and the uncertainties in the data that the models are validated against and are forced with. The

models should not be used by the IPCC until the literature provides the needed results and analysis.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

11. Any other comments

The work of Andreas Roesch on the correlated positive surface albedo bias of the models was known at the time of the FAR. The models under represented the positive surface albedo feedback to the warming by an amount that was quantifiable at over 3 W/m² globally and annually averaged. Since the models will eventually catch up with the surface albedo feedback over the next few decades of simulation when making their projections and climate sensitivity runs, this is an error as large as the increases in forcing in the various IPCC CO₂ forcing scenarios, raising the possibility that the model projections are twice as high as they should be based upon linear reasoning and that there is good reason to believe that the models no longer bracket the climate, if the every did, at the lower end of the reported results. The model projections in the FAR should be withdrawn during this correction process. It should be noted that since the model transient climate sensitivities taken at CO₂ doubling when most of the surface albedo feedback will have caught up, should not be effected.

The IPCC should acknowledge that significant diagnostic issues with the models have been published since the FAR, such as Wentz's report that models seriously under represent the increase in precipitation associated with the recent warming, and the correlated errors raised separately by Lindzen and Spencer with radiative imbalances and at tropical and sub-tropical latitudes.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Government focal point

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

IPCC assessment process is very robust with several levels of review. This has ensured that the IPCC reports are authoritative, comprehensive and balanced. The few errors that have come out of the vast scope of literature assessed is an indication that the procedures are on the whole fit for purpose.

The recent events do suggest, though, that more consideration should be given to quality assurance and quality control through editorial checking and cross checking between working groups. We suggest the following practical steps to address this:

- More training of and guidance to CLAs, LAs and REs.
- Clarify who holds responsibility to ensure procedures are implemented.
- Review Editors should not only have responsibility for ensuring that comments are properly addressed, but also for checking for accuracy of the text and references. They may need assistance to do this thoroughly, however, with implications for resources.
- Consistent and better cross-checking, especially of factual statements between all working groups.
- The recruitment of more experts from developing countries as authors and review editors would enhance the work in the regional chapters.

Selection of Convening Lead Authors, LAs, and RE's

Nomination process is left to individual countries to decide their own procedures but some sharing of approaches and even development of guidelines may be helpful. There is currently little guidance from the IPCC on what function the contact point has in the nominations – just to collect nominees or to provide a vetting role? This may help increase the number of nominations, noting that a significant number of developing countries did not make nominations.

3. What is your opinion on the way in which the full range of scientific views is handled?

The policy of the IPCC is to reflect the range of reviews. We would like to see some guidance about how this is implemented as part of the guidance to authors and editors on the process that ensures the full range of literature is assessed. There is of course a judgement about what constitutes “scientific views.” It does not seem reasonable to expect the IPCC to give credence to views which are clearly not supported by evidence, although explaining this may be necessary.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Governments perform a very important role in indicating what issues they feel need to be within the scope of reports (ensuring reports are policy-relevant without being policy-prescriptive) and in challenging and clarifying conclusions. This ensures Governmental buy in to the outcome and that reports are relevant to the policy debate. This is a particular strength of the IPCC process. Governments also play an important role in the effective functioning of the IPCC by making nominations of authors and editors, supporting scientists and providing strategic direction to the IPCC as primary customers for its products.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and

suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

As note in Q3 we suggest that the methods used to identify relevant literature are systematised and that there is an agreed approach to this initial step.

The use of the grey literature carries risks but it is also essential if Working Groups 2 and 3 are to provide a comprehensive view of the field. In particular, information about the experience and practice of the private sector and governments in mitigation and adaptation activities are found in sources that have not been published or peer-reviewed. This limitation is also particularly the case for the regional aspects, as many developing countries are not well represented in the peer review literature.

The IPCC's rules on how to use and site grey literature are clear. However, it is evident that the implementation of these rules could be strengthened. We suggest that IPCC should:

- Provide guidance on how to judge quality of grey literature .
- Identify who should be responsible for quality checking.
- Avoid the use of advocacy material.
- Increase the use of non English –language journals.
- As far as possible authors should make use of source literature and not secondarily quoted literature.
- Identify what sources are from the grey literature.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

This is an issue the IPCC rightly considers to be important and has sought to standardise the way in which confidence and uncertainties are communicated. This has proved difficult partly because different scientific disciplines themselves have different ways of communicating uncertainty. It is also important from a policy point of view to understand the implications of uncertainty from a risk management perspective and we would encourage the IPCC to consider further how risks can be presented as well as uncertainties.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Communication presents a major challenge to the IPCC because of the nature of the organisation. It is not a strongly centralised body, by its nature it does not have a formal position on science apart from its assessed products, which can create problems when asked to respond to new material. In fact it's official output is constrained by Governments to that which has been approved in its Assessment Reports. It is in essence very different from a standard 'corporate' body, but this difference is not widely presented or understood. In fact there is little control over who speaks for the IPCC. Individual authors may be taken by the media as IPCC spokespersons even although their role is very different from that of a corporate body. There is no guidance on whether past LAs or CLAs (even from earlier reports) can use their IPCC title when communicating – this gives a patchy picture of IPCC opinions. The challenge for the IPCC is to

be true to its scientific nature in communicating the outcome from assessments whilst at the same time dealing with criticism of the body or indeed parts of it, and managing who formally represents it.

There is a clear need to develop a communications strategy to inform what the IPCC is, how it works, how it deals with criticism and errors and ensure that it retains its reputation as the most reliable source of robust scientific evidence on climate change science. There were long delays in responses to criticisms in the press. Public engagement has also been very limited, with a small number of television interviews and some seemingly uncoordinated news articles from IPCC scientists. The IPCC has no press response strategy in place and is unequipped to deal with crises. It has generally been poor in its attempts to retain public confidence.

We suggest that the IPCC should appoint a senior communications officer and put in place a well co-ordinated and pro-active communication strategy.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

The basic assessment model has been remarkably effective and we do not propose that it should undergo wholesale change. It does however need to evolve in response to changing circumstances, including the increased scrutiny of the media, the increased political profile of climate change and the enormous growth in research output related to climate change and a large increase in review comments.

In this regard we would suggest that the IPCC:

- produces more frequent updates between major assessment reports
- more strictly limits the size of reports
- Governments to recognise the need to provide more support to authors and review editors
- Invite sceptics to take part in the review process (though some already do)

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The IPCC has a light central management structure which has largely functioned effectively in the past but the increasing demands noted above suggest that the management structure needs to be strengthened and more activities clearly written down. Issues which should be reviewed include:

- Clarification of responsibilities and management decision making, both on a day to day basis and strategically.
- A tightening up of processes, such as recording of decisions in plenary, preparations of management materials further in advance.
- A written IPCC strategic plan.
- A clearer process to deal with errors and the media more generally.

- Better communication with member Governments.
- Increased transparency.
- TOR for all IPCC management posts, and written policies for conflicts of interest.

Regarding IPCC management we suggest:

Reconsider the role of the secretariat in providing a corporate picture and ensuring standards. The Chair has an informal management team (the e-team) but suggest IPCC needs a formal management board and a CEO who is separate from the Chair. At the moment the roles of Chair and CEO are embodied in one person. The chair is a part time role and it is unreasonable to expect him to cover all the roles required as a CEO. It would be helpful to clarify roles of the vice – Chairs and make more use of them.

II. Any other comments

We hold the IPCC to be an exemplar in the matter of scientific assessment and we have every confidence in its capability. We wish to IPCC to continue its work and to be strengthened to meet new challenges. At the same time we recognise that it is important to address mistakes in a timely and effective manner and to have processes that reduce the likelihood of serious mistakes to virtually zero. In this context we are very supportive of the IAC review and see it as a great opportunity to make an excellent organisation even more effective.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Contributor, Lead author, Convening lead author, author of the Synthesis report, Review editor

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

In 2001, there was considerable overlap in the response to the policy questions which might have been avoided with more consultation with scientists when the bureau framed the questions

2b. Election of Bureau, including Working Group chairs

Need to ensure enough scientific expertise to oversee working groups.

2c. Selection of lead authors

2d. Writing of working group reports

Reports have got longer and the process has got more bureaucratic. Being a lead author is now a major commitment for an active scientist. More is not necessarily better.

There is a need to check consistency between the different working groups – eg that working group II's assumptions about predicted changes in mean climate (and extremes) is consistent with the findings of working group I, and that they use consistent definitions of uncertainty and attribution.

On a totally different aspect, there is no clear statement from IPCC on what is public and what is private information (re FOI requests). In practice, I suspect authors should treat all material as potentially being in the public domain.

2e. Review processes

Despite recent criticisms, I do not know of any scientific review process which is as open and comprehensive as that carried out by IPCC. Over the last 20 years it has published 12 major reports the thickness of telephone directories with to date only one serious error to date.

The process is very time consuming, partly because reports have got longer and partly because the process has got more complex. There must come a stage where this is counterproductive- if people have too much to do, the quality of checking will deteriorate. Obviously, it is best to not to have any errors, but given human fallibility, one cannot hope to cover every eventuality through increasing the complexity of the process.

There is an outside perception that IPCC does not permit the use of unpublished material- this is not the case. However, at the risk of increasing bureaucracy, I think more could be done to make unpublished material used in the drafts more accessible to reviewers etc.. There is a tension between having an early cutoff for papers being accepted for publication which means that reports can be 1 to 2 years out of date before they are published, and a later acceptance date which means that they may not get due consideration in the review process.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

Ideally, the main topics for the synthesis report should be decided first, so the working groups can ensure that the necessary material is assessed by the relevant experts before the synthesis group convenes. My experience in the third assessment is that the synthesis report raised some issues that had not been addressed in the working group reports (but might have been if the working groups had had prior notice). In practice, I suspect some interaction may be necessary.

2g. Adoption of report by the IPCC plenary

Time consuming, dependent on a good chairman to make it work. But probably better than average for this sort of international group.

2h. Preparation of any special reports

For those involved , they can be almost as time consuming as the full reports- they should be commissioned sparingly.

3. What is your opinion on the way in which the full range of scientific views is handled?

In general, this has been done well, but is becoming more difficult as the subject has become more politicized. In my view, it is becoming more difficult to distinguish between genuine scientific uncertainties as opposed to different political interests, especially the output from blog sites. These can raise genuine issues, but the quality is very variable and often not constructive. I don't have an answer how to rectify this.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

They need to articulate clearly what topics they wish the reports to cover. If done well, this could help narrow down the material covered in the reports so it is more focused, shorter, but closely scrutinized.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

There is an evitable tension in this. IPCC needs to be seen as open and inclusive. However, the volume of material published on climate change has increased enormously over the last 20 years and it is not possible to review and summarize to the degree that was originally possible. If the remit is more clearly defined (see 4 above) and the lead authors were more ruthless in including only material directly relevant to the that remit (an assessment of the science underpinning policy, not a review of the whole of climate science) this could lead to shorter reports without necessarily sacrificing the breadth of the relevant literature considered. This said, every WGI co-chair to date has tried to limit the length of their report with little success

My perception is that many of the scientists regard the report as a review of all the climate science since the last report, not an assessment of the subsection of the science needed to guide policy, hence the reports grow longer each year.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Just to be clear , I don't think IPCC can be held responsible for data quality etc in the published papers it quotes- that is an issue for the journals concerned.

In terms of the IPCC reports, any conclusion in the executive summary should be directly (and easily) linked to a section in the main text and the papers on which it depends. In the first assessment, I tried to make each summary finding in the my chapter correspond to a sub-section title so that it was easy to find the text supporting each conclusion- but as the subject has

developed this may be more difficult to do.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

During the assessment reports, the science issues are generally handled well by the Working Group chairs who will know some of the science themselves, and consult with the relevant experts in their working group. There may be a case for ensuring some-one with expertise in handling the media (both responding to issues and initiating media releases) in the Technical support units working to the WG chairs,. I think that would work better than basing media support in Geneva where there is little contact with the development of the reports, but some central co-ordination might be necessary.

A real problem is after the report is complete and the working groups and technical support staff are disbanded, leaving a small number of permanent IPCC staff whose knowledge of the detailed science is inevitably limited, and who do not have the direct contact (or relationship) with the relevant experts who can handle the controversies (see also response to question 10)

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

See comment 4 and 5 above. The current setup has evolved in the light of experience (for example review editors were introduced after the second assessment following disputes about the detection and attribution chapter)- although alternative approaches may improve on some aspects of the current approach, one needs to be aware of potential downsides.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The main problem with the current structure is that once the lead author teams are disbanded at the end of the assessment, the remaining skeleton staff in IPCC do not have the expertise (or access to the expertise) to deal with errors, criticisms and controversies that arise. In addition, the individual lead authors may not have the infrastructure and institutional support to deal with concerted efforts from interest groups to discredit them or the reports (for example, the Wall Street Journal's campaign on Ben Santer after the second assessment).

One possible mitigation is to explicitly retain responsibility for dealing with any issues arising from the report with the chairs and lead authors (perhaps some TSU support) until the next report is published. Then the IPCC would retain a direct link to those who wrote the report, and hence those best able to respond to respond to any issues arising from it.

The funding support should come from government who both task the IPCC, and are probably the main beneficiaries of its output - (not a popular suggestion in the current economic climate)

1. What role(s), if any, have you played in any of the IPCC assessment processes?

CLA

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

The policy questions in WG3 are framed by the chapters and sections, which are agreed by the WG at dedicated scoping meetings. They must largely reflect the body of literature available in order that there is a literature to assess. However, the policy issues to be covered in a report cannot be completely predetermined, since the chapter topics are chosen years in advance of the deadlines for publication of literature covered in the IPCC ARs, and new literature can emerge before the deadline. Governments have a say in approving, if not suggesting, the overall structure and topics covered. The writing teams have a substantial influence because they are covering new literature and the new policy issues that have emerged during the assessment process. The chapter topics have to be sufficiently general to allow this emergent literature to be included, e.g. the new research on induced technological change covered in AR4 WG3.

The intention is to be policy relevant, not policy prescriptive. This issue is especially important for WG3, since the treatment in some of the literature, e.g. on cost-benefit analysis (CBA) of climate change, adaptation and mitigation, contains assumptions that can be controversial, so that the conclusions may be seen as policy prescriptive. The prime example is the assumed value placed on human life and health in the CBA literature – this can depend on average income by country in some studies. The effect of the assumption is that lives lost in developing countries may be included in the CBA at much lower values than those of lives lost in developed countries.

When it comes to the Summary for Policymakers (SPM), this comes late in the process, after the main report is largely completed, and in AR3 and AR4 WG3 the first draft of the SPM was developed by CLAs meeting with the Co-chairs and TSU. The SPM then went through a succession of drafts allowing Las and others to comment, before going to the Plenary Meeting. I felt that this process went very well. The CLAs were able to assure the scientific credentials of the SPM in relation to the underlying report and literature and the governments were able to influence the text so that it covered relevant policy questions.

2b. Election of Bureau, including Working Group chairs

Not enough knowledge.

2c. Selection of lead authors

Strength of past procedure: good representation across countries and disciplines relevant to the topics.

Weakness: Uneven level of expertise and gaps in expertise that cannot always be filled by appointment of Contributing Authors

2d. Writing of working group reports

Strengths: allocation of responsibility across the writing team; group acceptance of report text; sufficient number of face to face meetings for the team to understand each other and cooperate; well tried and tested set of procedures for internal and external reviews. Weaknesses: difficulties of coordinating an international team, when members have many conflicting calls on their time; uneven quality of text; “last resort” function of CLAs who have to fill in gaps and re-write text after deadlines have been missed;

2e. Review processes

Strength: transparent, wide and open review process allowing divergent views to be expressed, debated with written responses.

Weaknesses: very time consuming; heavy burden on CLAs required to cover all responses; later drafts covering literature published near the end of the process can get missed by external expert reviewers.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

No comment.

2g. Adoption of report by the IPCC plenary

Strengths: an essential component of the assessment as it allows governments to comment on the report and follow through the consequences for policy making; success depends on the chair being in command of the meetings and government delegates being responsible in limiting “grandstanding”.

Weaknesses: meeting can become fractious and “political”.

2h. Preparation of any special reports

Not enough knowledge.

3. What is your opinion on the way in which the full range of scientific views is handled?

Coverage of the full range depends on the review process and the responses of the writing team to comments submitted. Reviewers were able to draw attention to other literature and members of the writing team were required to respond with written and open replies. The chapter reviewers had a duty to ensure that the comments received were considered and that the responses were adequate.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

The IPCC is remarkable for developing procedures for governments to consider the synthesis of scientific evidence produced by experts and develop line-by-line SPMs that convey the agreed implications, together with a judgment about their reliability and the strength of the literature.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The treatment of non-peer-reviewed or “gray” literature should be reviewed. Peer-reviewed literature is taken to be journal articles in journals that have independent review processes. However, especially for the policy literature reviewed in WG3, there is a substantial body of research papers and government-sponsored reports that are not represented in the journal literature. Examples are the Stern Review and the report on carbon leakage by the Netherlands energy research institute ECN:

Sijm, J.P.M., O.J. Kuik, M. Patel, V. Oikonomou, E. Worrell, P. Lako, E. Annevelink, G.J. Nabuurs, and H.W. Elbersen, 2004: Spillovers of climate policy: An assessment of the incidence of carbon leakage and induced technological change due to CO₂ abatement measures. ECN, Netherlands, 251 pp.

These are comprehensive and scholarly reviews of interest to governments and the policy community and should be covered in any more general assessment, such as AR4. There are also many reports written to influence policy, e.g. by NGOs such as WWF or Greenpeace, which are derivative and which do not include new information. In WG3 AR3 and AR4, the procedure was to leave the selection of relevant gray literature to the writing team, with the proviso that electronic copies of such literature be deposited with the IPCC Secretariat at the conclusion of the report. No particular precedence was accorded to peer-reviewed and gray literature – the assessments referred to the literature where it was relevant and appropriate to the topics covered.

I have one suggestion as to how the IPCC procedures could be improved regarding the treatment of gray literature. The Review Editors (RE) could be given the additional responsibility of assuring the quality of all gray literature referenced in the chapter

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

This topic is very important and has been much debated. AR4 WG3 chose to rank SPM statements and other findings in the Technical Summary and main text on two dimensions: level of agreement on the finding in the literature (low, medium or high) and amount of evidence on the finding in terms of numbers and quality of independent studies in that literature (limited, medium and much) supporting the finding. (AR4, SPM, Endbox 1, p. 23). The approaches based on confidence levels or likelihoods were rejected because they fail to characterize sufficiently the uncertainties associated with human behaviour, which is an inherent property of mitigation.

These metrics worked well in that it was fairly easy to reach agreement across the members of the writing teams and the uncertainty statements conveyed useful information. However there was a subtle process by which the text of the findings was qualified sufficiently for the uncertainty statement to become obvious.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Each WG in AR3 and AR4 was responsible for its own data quality and quality control, with overall procedures adopted by the TSU and the CLAs meeting as a group. The process relies on the reviews of drafts to pick up errors and omissions. At the later stages of publishing the reports, the CLAs had a greater responsibility for ensuring that the text and data represented the views of the team and in removing any errors. This worked well for standard checks, such as those for references, but less well for complex tables, especially those constructed by very busy team members, who were then unavailable for checking or who did not check fully.

There appears to be no formal process for rectifying errors and omissions discovered after publication. Some additional procedure would be helpful, such as errata pages attached to the IPCC website presenting the reports.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The IPCC communicates through the offices of the Chairman and the Secretariat in Geneva. The procedure places a heavy burden on the Chairman, but it is clear that a distributed communication system may be more problematic. Those who speak for the IPCC as a body must be the appointed officers. This implies that the new team, e.g. that for AR5, is responsible for communicating on findings in AR4 that become controversial in the media.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

It is governments who created, funded and supported the IPCC and it is for them to decide how such a complex, wide ranging and far reaching topic as climate change and human responses to climate change can be assessed, synthesized and interpreted. The assessment model has changed from one report to the next as the evidence has mounted and the research literature accumulated. In my view there has been institutional learning improving the quality and depth of successive reports. In AR4 WG3 the definitions of mitigation potentials have improved in substance and in clarity compared to those in earlier reports, and the synthesis of the literature providing such potentials has been better quantified and presented. Communication in the writing teams has been transformed by use of e-mails and the internet.

The process could evolve through more adoption of internet techniques, with on-line meetings of writing teams and web-based draft chapters for discussion and comment. In a paper commenting on the way forward after AR4, Hasselmann and Barker (2007) proposed the formation of an independent Climate Policy Panel to undertake integrated modeling and policy analysis on behalf

of governments, rather the way the International Energy Agency supports OECD energy policies. There is a requirement for data and analyses now partly undertaken by the OECD and IEA Secretariats making assessments of policies to reach agreed climate targets, such as limiting the increase in global temperatures to the 2 degrees C above pre-industrial in the Copenhagen Accord of December 2009.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Not enough knowledge.

11. Any other comments

No.

Hasselmann, K. and Barker, T. (2008) 'The Stern Review and the IPCC Fourth Assessment Report: implications for interaction between policymakers and climate experts', *Climatic Change*, 89:219-229.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

Convening lead author, reviewer, member of a scoping panel, review editor. Also participant in other assessments. The "compare and contrast" between the two assessment processes has probably fuelled my perspective. PLEASE NOTE: In almost all the following, my comments refer specifically to WG1.

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

In my own area, I have perceived some lack of co-operation, at both the scoping level and the writing level, between different working groups. Indeed, in this area I believe there has been what I call a "inadvertent consensus" between IPCC and governments (on how emissions of different gases are placed on a common CO₂-equivalent scale) – IPCC has not provided a proper assessment of this area because governments have not really asked for it and were content with the what was available, and the governments have not asked for it, because they thought IPCC was also content. This is a narrow example, but it leads me to wonder whether the same happens elsewhere in the IPCC process.

During scoping of the AR4 there was quite extensive discussion of documents on cross-cutting (i.e. across WGs) but I do not believe these came to fruition.

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

I think a key issue here is ensuring that a given person is not a lead author (especially a convening lead author) too frequently, as I think there is need for refreshment of perspective. Certainly people shouldn't be convening lead authors on successive reports, and perhaps not lead author on any more than two in a row. That said, there is a clear tension here, as it requires quite special skills to be a convening lead author (being widely knowledgeable and having considerable "diplomatic" skills) as well as being willing and able to dedicate a huge amount of time to doing this job over an extended period

2d. Writing of working group reports

2e. Review processes

The wide review process is a great strength of the IPCC process although it leads to a concern as to how the lead author teams assimilate and respond to review comments. This has improved over time – for the early assessments, there was little or no monitoring of how lead authors responded to review comments, and it is regrettable that a better system was not put in place at this time. The appointment of review editors has been an important step forward and is to be welcomed.

Overall, I believe it to be easy to be critical of the IPCC process, but much harder to come up with effective alternative models.

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

The special reports have been a positive contribution when deeper assessments of narrower areas where they are important from a policy point of view. I believe that most special reports that I am most familiar with have been successful and have actually been better at melding the perspectives of WG1 and WG3 scientists, in a way that the main assessments have not.

3. What is your opinion on the way in which the full range of scientific views is handled?

There is clear difficulty in handling literature which is either unnecessarily alarmist or else ridiculously doubting of well-established facts in climate science; we have to trust the lead authors, review process and the review editors to apply a sensible filter to this material and where necessary to provide clarifications of points where there is frequent questioning – one example was a box in an IPCC 1994 report explaining why CO₂ concentrations are not so high that its effects have saturated. Alas, this has not prevented many people from continuing to raise this issue!

The Ozone Assessment process has a “20 questions” aimed at frequently raised issues, which I believe has been successful in explaining the basics of the background science at an appropriate level. IPCC has not, to my knowledge, tried to replicate this model.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

This is where the difference between IPCC and ozone assessments is most stark. In the ozone assessment process, the scientists deliver their assessment with little or no input from governments and there is a clear separation between the scientists and policymakers.

Although I have been critical of the nature of the governmental input to IPCC in the past, I now regard it as necessary, if governments are going to buy in to the conclusions of the assessments.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

WG1 reports are on the whole well-referenced and now (although it was always thus) there appears to be a tendency to let “hot” papers mature before they are given a high profile in a report. There is always a tension between being up-to-date and ensuring that new studies become well-accepted and maybe this should be considered explicitly by the IPCC in its procedures.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

I can only really speak for WG1, I think claims by the common man (and the common fellow!) that IPCC neglects uncertainty are wide of the mark. Indeed, the reports are, in my view, pretty much dominated by discussions of uncertainty, sometimes at the expense of not clearly enunciating what is certain.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Again, speaking from a WG1 perspective, I believe the procedures are, these days, generally good, especially as errata are available as “living documents” on the IPCC website. Given recent examples in the media, I am not so convinced that WG2 has always applied sufficient quality control, although the examples that have been raised have been isolated and rather minor in the bigger scheme of things.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

I think a great difficulty is that people associated in some way with IPCC, also wear many different hats – including the chairs and co-chairs. There is a need for a clear distinction between when they are speaking for themselves and for their institutes and when they are speaking in

their role as IPCC officers. This is particularly important when the issues under discussion stray from advising policymakers to advocating policy.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

As noted above, I believe it to be easy to be critical of the IPCC process, but much harder to come up with effective alternative models. The IPCC assessments have made a great contribution to understanding climate science, and encouraging co-operation between and amongst data producers and modelers (which have made telling contributions to our understanding of the uncertainties). On the whole, I believe that the assessment model should be retained for the foreseeable future.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

IPCC Bureau member, CLA. Also Chair of a Task Group

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

This is limited currently to i) determination of key issues at the start of the assessment cycle, and ii) identification of key question to be addressed by SRs and TPs.

In future I would recommend: More precise identification of key policy issues that would thread through the entire Assessment, to the SYR. For example, mitigation scenarios were barely considered in 2007 WG1 with the consequence that IPCC had little to inform UNFCCC about mitigation targets/actions for Copenhagen talks. These, then, needed to be worked on 2007 by individual research groups which did not have IPCC imprimatur and this led to less-than-complete 'buy-in' by countries at Copenhagen . This was one reason for disappointing progress at Copenhagen: the lack of a clear consensus- and evidence-based climate target.

2b. Election of Bureau, including Working Group chairs

Adequate, given the current framework

2c. Selection of lead authors

There are two issues here:

- i) Nomination is theoretically universal, but in practice needs massive attention to dig out a good spread of authors. In WGII we spent much time on this: making a list of all who had published in the field, then encouraging nominations from all. Without this, we would have

been too limited by government nominations. In future I would recommend: a policy involving much wider soliciting of nominations, and development of a database of researchers which could be tapped.

- ii) Selection: A more specific effort is needed to recruit authors who are new to the IPCC. WGII we developed our own informal target, i.e.: one half of selected authors to be from developing countries; one-third to be new to the IPCC; as many female authors as reasonable; but all to meet the IPCC standard of having an established international reputation. For many WGII chapters, there are additional challenges because different regions and different sectors each need representational balance.

2d. Writing of working group reports

Too broad a heading: it involves 200 authors over 3 years in several different steps and processes. You need to break this down into sub-questions if you want a targetted response. I would be happy to address this issue in discussion or in follow-up questions from you.

2e. Review processes

This needs strengthening in quality rather than quantity:

Governments need to give more attention to drafts for comments.

Experts additionally need to be more targetted for comments on specific issues, as well as for chapters as a whole

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

SYR in 2007 was too-much a post-Assessment appendage. Key questions need formulating at start of the cycle, and then threaded through the entire assessment. This is intended in 5AR

2g. Adoption of report by the IPCC plenary

This is the key objective of the IPCC: to achieve ‘buy-in’ by all countries to a common view of the current state of knowledge.

The consensus approach in Plenary is demanding but, given time, works well.

2h. Preparation of any special reports

More targetted use of these would enable more frequent update of the Assessments.

3. What is your opinion on the way in which the full range of scientific views is handled?

Authors need a continuous reminder to review current knowledge whether or not there is clear ‘convergence’ in the knowledge. For much of the WGII area there is often no clear ‘convergence’ and a wide range of possible impact outcomes. Here the challenge is to account for varying

views about, for example, the extent to which technical know-how can alter vulnerability. It is important that authors spell out the (often very wide range of) outcomes that could stem from varying combinations of technology and political development. In WGII this range reflects very large future unknowns rather than differences in ‘scientific view’ which seem to be a WGI issue at present.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

This appears to work relatively well through the Plenary process, the consensus-based approval of the Assessment outline and the final report.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

Probably well over half of research on climate change impacts is now published in reports and does not subsequently appear in journals; and the equivalent figure is probably over two-thirds for research on adaptation (which is being largely funded under UNFCCC programmes, being done by governments and reported in National Communications).

Some of this is strongly reviewed (eg UN, World Bank, OECD, etc); some is moderately reviewed (eg national environment agencies of developed countries, and the larger NGOs such as WWF). Some is weakly reviewed (eg government reports in developing regions).

The most significant adaptation work is currently being done in least developed regions (where the need is more pressing) and often not reported in English. Very little of this may ultimately appear in journals, but if it does then it will be a few years down the line.

So, the problem is considerable for WGII-type assessments in the IPCC. The preponderance of important so-called ‘grey literature’ simply cannot be ignored by the IPCC. The information it holds is more current than that in journals and it captures non-English knowledge more effectively.

However, the IPCC guidance can be improved: Current IPCC guidelines conflate the terms ‘peer-reviewed’ and ‘journal’ which is not at all helpful. The real challenge is effectively to distinguish between peer-reviewed non-journal material (eg agency reports) and other more weakly reviewed non-journal material; and then to provide (for the latter) more detailed guidance on careful analysis for provenance and robustness.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

The guideline on handling uncertainty in the 2007 Assessment worked well. In WGII the main difficulty is that the knowledge base on uncertainty is thin (eg impact information even from model experiments frequently is not reported with error bars, and is often only for a single

climate change scenario)

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

There is a procedure for handling technical errata (adding to the pdf web version). There is not at present, a procedure for handling other corrections to the Assessment.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

There is barely any capacity for communication. The IPCC in its original (and broadly present) form publishes its Assessments, and that is all. It is geared only to this, and after each report its authors disperse.

It would not be a simple matter to improve communication because some fundamental issues would be faced, such as:

- i) In answering a question about statements in a previous IPCC assessment: Adding a strong science arm to the Secretariat could answer the simpler questions only. More complex ones would need to be referred to authors but these disperse after each assessment and do not have any remaining IPCC affiliation.
- ii) In answering a question about current knowledge that may not be in the latest IPCC assessment. The IPCC was not intended and is not geared to provide a running commentary on the state of knowledge.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

International action on climate change needs universal government ‘buy-in’ on the state of knowledge. The purpose of the IPCC is to provide the mechanism for this and, overall, it does this quite well.

Probably the 2-2-2 model would be preferable to the current 5-year cycle, i.e. with WGs reporting in a 2-year succession instead of all at once in year 5 (see the Govt of Belgium’s comments on Future); and, between assessments, a schedule of targetted SRs could provide updates on more-rapidly-developing knowledge in specific fields.

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

The Chair and Co-Chairs need to provide more strategic lead.

The Secretariat needs: i) much more scientific strength (eg see the UK government’s recommendation on this), and ii) enhanced capacity in communication (which would need close contact with IPCC authors, not just well-informed press officers).

The Technical Support Units are the key resource of the IPCC. They essentially coordinate the IPCC's assessments. Yet their distributed and temporary nature results in there being no strong 'centre' to the IPCC: It is a very distributed organization.

Many would argue (and I would agree) that the IPCC is best following this loose, distributed form, rather than being modeled on a top-down business organization. The former is more suited to working in the world of science. However, a stronger professionalism of management needs to be threaded throughout this loose structure.

11. Any other comments

- i) I am surprised how narrow, and premise-based, are the above questions.
- ii) They miss some fundamental issues that frame the IPCC (and therefore have determined its procedures). For example, the work of the IPCC is greatly affected by there being no effective international steering of global research on climate impacts, adaptation and mitigation. This exists only, partially, for climate science through the WCRP. A consequence of this lack is that the IPCC is summarizing research that has not been coordinated prior to its assessment; and the gaps in knowledge that IPCC assessments detect have few means of coordinated follow-through.
- iii) The IPCC should have renewed itself in 2008. With its reputation on a 'high' after the Nobel award, it would have been opportune to re-examine some basics (eg the merit of the 5-year assessment cycle in the context of an accelerating knowledge and policy environment; the issue of 3 WGs, etc). The demise of the Pugwash initiative in the 1950s seems a potential parallel; highly effective at its start but quite quickly defunct through failure to renew itself. At its early 2008 Plenary the IPCC showed a lack of strategic thinking and decided, essentially, to continue unchanged in purpose and practice. That was a missed opportunity.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

2a. Scoping and identification of policy questions

2b. Election of Bureau, including Working Group chairs

2c. Selection of lead authors

2d. Writing of working group reports

2e. Review processes

2f. Preparation of the Synthesis report, including the Summary for Policy Makers

2g. Adoption of report by the IPCC plenary

2h. Preparation of any special reports

In principle, all this should have worked. In practice, it did not. The main problems were (a) the large and unwieldy nature of the IPCC, and (b) the fact that the stakeholders were organizations (i.e. Governments) rather than individuals. So the stakeholders did not have the personal drive and motivation (or the mechanisms) to ensure that their reservations were fully taken into account. Comments sent back to the drafting team were either (almost) ignored, or dealt with inadequately. Then the “revised” drafts were not circulated in a timely manner for further comments. Those who had reservations were eventually worn down, or simply by-passed.

3. What is your opinion on the way in which the full range of scientific views is handled?

Badly. There is a strong “herd instinct” at work, and some big egos right at the centre. Neither of these factors are conducive to level-headed, rational discussion, debate or analysis

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Hopeless – see Q. 2 above. This is NOT the way to conduct a scientific debate.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

I am truly shocked by the cavalier use of non-peer reviewed, anecdotal material. This should never have been allowed to happen

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

Uncertainties seem to have been systematically played down. There are HUGE problems, e.g. with quantifying the role of water vapour in the upper atmosphere, and with establishing the effects of dust particles (in the latter case, even the SIGN of the effect seems to be subject of debate, let alone its numerical quantity!)

Most disturbing of all is the way the uncertainties in the historical data were dealt with. The notorious “hockey stick” graph now seems to be a complete travesty of the truth. Data on the warm period in medieval times appears to have been “adjusted” in such a way as to remove it altogether from the final results. I URGE THE IAC TO LOOK PARTICULARLY CLOSELY AT THIS ASPECT OF THE SCIENTIFIC ANALYSIS OF CLIMATE DATA.

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Too little, too late.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

The IPCC first stoked hysteria, and then in undermining its own case by over-stating and mis-stating the conclusions that could be drawn from the data

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

Slim it down, and get rid of that crazy man at the top.

11. Any other comments

I consider that the review panel should broaden their scope, in one important respect. They should look at the generic issue of the sociological behaviour of large organisations. I believe it is crucial to understanding what has happened to the IPCC. If an organisation grows too large, it becomes very difficult to control. The conventional checks and balances imposed by the rational behaviour and interactions within a smaller group cease to work. Instead of broadening the inputs to the centre, the effects of excessive size are to reduce the number and effectiveness of those inputs. Power becomes increasingly concentrated at the centre. The checks and balances fail, and the organisation can spiral out of control. There are plenty of recent examples of this in other fields, ranging from (e.g.) Enron to Lehmann Brothers and the Royal Bank of Scotland. If the IAC review panel can make clear recommendations on this aspect, then it may do a broader service to the global community than simply commenting on the climate change controversy

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None. My response is in answer to the questions on-

- government involvement in the IPCC assessments **and**
- an alternative process.

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

There should be no government involvement in the scientific risk assessment which should be carried out at arm's length from governments to be submitted to governments and to the public when completed by the scientists. Actual government involvement in a scientific environmental health assessment is unheard of.

9. Comment on the sustainability of the IPCC assessment model. Do you have any suggestions for an alternative process?

PUBLIC INVOLVEMENT RECOMMENDED

UNDER ESTIMATION

The problem with the IPCC is one of huge under estimates of both climate change dangers and of required mitigation measures to prevent global climate catastrophe

The IPCC assessment is supposed to be an open and transparent comprehensive up-to-date assessment of the risks from global climate change. The IPCC make up and process is so constrained and badly compromised that none of these mandates are met.

The IPCC assessment process and assessment on many aspects is biased towards the continuation of the fossil-fuel based world economy.

Science is by weight of evidence and not by negotiation - certainly not behind closed doors.

All aspects of the IPCC assessment have to be opened to the public, including representatives of interested youth. This should include involvement in the scoping.

Experts on risk assessment and human rights must be invited onto the Panel.

It is wrong and intolerable for the IPCC scientists to be ordered not to make recommendations on global climate change risks, policy prescriptive conclusions or recommendations, not to make value judgments, not to make recommendations on what is dangerous or safe climate interference and not to make recommendations on what a dangerous level of global warming and climate change is.

It is wrong and intolerable for the IPCC scientists to be ordered to omit the very greatest risks and dangers of global climate change because of paucity or wide ranging scientific research results. This is the very opposite of a risk assessment and a certain formula for permitting (and committing) global climate catastrophe.

The IPCC scientists must be permitted by intergovernmental instruction to make recommendations on global climate change risks, catastrophic risk aversion to population health and survival, and to safe and dangerous climate interference and global climate changes.

I am very sad to have to say that the IPCC make up, procedures and last assessment are unethical and unscientific.

The support of the under -estimating glaring deficiencies and huge errors of the IPCC fourth assessment by the scientific institutions is deplorable.

I include the worst of these in the attached document I have prepared 'What is missing in the IPCCs mitigation assessment'.

1. What role(s), if any, have you played in any of the IPCC assessment processes?

None

2. What are your views on the strengths and weaknesses of the following steps in the IPCC assessment process? Do you have any recommendations for improvement?

I would prefer all of the steps to be stated, with references. There is no mention in WG1 of the first step, absorption due to CO₂ at 17 micrometres, and the source of the original data used. Nor are spectra given

3. What is your opinion on the way in which the full range of scientific views is handled?

There is too little attention paid to estimation of uncertainties

4. Given the intergovernmental nature of IPCC, what are your views on the role of governments in the entire process?

Too much pressure from Governments to find evidence of global warming.

5. Given that IPCC assessments consider a vast amount of literature, what are your views and suggestions for improvement on the sources of data and the comprehensiveness of the literature used, including non-peer-reviewed literature?

The peer-review is by committed climate scientists.

6. What are your views and suggestions regarding the characterization and handling of uncertainty in each of the working group reports and the synthesis report?

This is given too little attention

7. What is your view of how IPCC handles data quality assurance and quality control and identification and rectification of errors, including those discovered after publication?

Too much resistance to suggestions of error.

8. What is your view of how IPCC communicates with the media and general public, and suggestions for improving it?

Again resentment of questioners

10. Do you have any suggestions for improvements in the IPCC management, secretariat, and/or funding structure to support an assessment of this scale?

There should be more continuity, and some scientists should remain accessible to answer queries

