



Energy research Centre of the Netherlands

Review of EU Biofuels Directive Public consultation exercise

Summary of the responses

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Introduction

This document contains a summary of the responses to the public consultation in the context of the review of the EU Biofuels Directive, which was held in April-June 2006. The closing date was July 10th, 2006. Responses covered are those received up to July 12th, 2006, and a small number of reactions that were announced before July 10th but arrived a short time later. The outcome of the discussion at the Amsterdam Forum¹ was also taken into account.

This document aims to give a balanced and exhaustive impression of the broad variety of responses, and to include the most relevant remarks made. However, the authors cannot be held responsible for any misinterpretations of the responses, or suggestions that were overlooked.

In total, 144 responses were submitted; an overview is in Annex 3. All responses are available at the EU website². Many respondents put a lot of effort in expressing their views with regards to the questions as mentioned in the questionnaire as well as to additional topics. Table 1 (next page) shows a breakdown of the responses into different categories of stakeholders. In the categories 'NGOs' and 'Private citizens' some responses are more or less identical, containing a standard document with minor changes and additions made (categorised as 'group responses'). In the category of stakeholders from the ethanol industry, more than half of the respondents submitted (almost) identical responses as well.

Table 1 - Breakdown of responses to the public consultation

Website category	Number	Subcategory	Number
NGOs	26	Environmental/ nature	12
		Biofuels/vegetable oils	5
		Sustainable transport	2
		Group responses	3
		Other NGOs	4
Institutions/Member States	16	Research institutes	2
		MS governments/ministries	8
		Other governments	1
		Other institutions	5
Industry/ private sector	83	Universities	4
		Feedstock-related	15
		PPO	see NGOs
		Biodiesel	10
		Bioethanol	18 (incl. 10 group resp.)
		Car manufacturers	9
		Other industry	27
Private citizens	19	Group responses	10
		Individual responses	9
Total	144		

¹:

http://www.senternovem.nl/AmsterdamForum/Amsterdam_Forum_II/Proceedings/Review_of_the_biofuels_Directive.asp#

²: http://ec.europa.eu/energy/res/legislation/biofuels_consultation_en.htm

Section 1 - Is the objective of promoting biofuels still valid?

Question 1.1

Is the objective of promoting biofuels still valid?

The industrial stakeholders generally state that the promotion of biofuels is still a valid objective. The most important reasons mentioned are:

- Security of supply (SoS): the transport sector is dominated by oil-based fuels; increasing dependence on imported oil; rising costs of fossil fuels; depletion of fossil fuels.
- Reduction of greenhouse gas emissions: GHG emissions from the road transport sector continue to rise; equitable contribution of the transport sector to comply with the Kyoto target.

It is generally argued that there are only a few (short-term) options to replace fossil fuels in the transport sector. However, besides the promotion of biofuels, some stakeholders argue that the use of biomass should be supported for heat and power generation as well, since the use of biomass to reduce GHG emissions is more cost-effective in these sectors in comparison with the transport sector.

Other reasons for promoting biofuels given by industrial stakeholders are:

- Creation of jobs.
- New market opportunities for the agricultural sector (also in developing countries).
- Access to energy in developing countries.
- Technological development and technological transfer.
- Reduction of non-GHG emissions (e.g. biofuels are sulphur-free).

However, some industrial stakeholders argue that the objective of promoting biofuels is only valid if certain conditions are met, such as:

- The energy and CO₂ balance of biofuels should be positive.
- Biomass feedstock should be cultivated and transported in a sustainable manner.
- Possible distortions of markets for raw materials (e.g. vegetable oils and fats), which are also used by other industries, as well as disturbances of markets for by-products of biofuels production should be taken into account.
- Biofuels that have the most cost-effective GHG reduction potential should be encouraged more than other biofuels.
- The use of biofuels in transport should be accompanied by other measures such as vehicle efficiency improvements.

The governmental institutions that have responded also agree, except for the Danish government, that the objective of promoting biofuels is still valid, with GHG and SoS concerns mentioned most, emphasising that environmental benefits, sustainability and cost-effectiveness should be guaranteed. The Irish government states that the extent of the contribution of biofuels to environmental objectives, security of supply, and rural development is very much dependent on how policy is to be developed in the coming years. The UK House of Lords adds that the extent to which biofuels can contribute to environmental and economic objectives will vary according to national circumstances; and judgements as to their validity should remain the preserve of Member States. The Danish government argues that specific binding targets for biofuels are not consistent with the principles of subsidiarity and giving flexibility to Member States. Neither are they consistent with the guiding principle of cost-efficiency. Furthermore, the Danish government is of the opinion that promotion of biofuels at the Community level should be concentrated around development and marketing of the more cost-efficient second-generation biofuels.

In general, NGOs are more sceptical about the validity of promoting biofuels in the EU than industrial stakeholders. Some argue that it is only valid if it is part of an energy policy in which biofuels - as a renewable energy source - are integrated into a broader context of e.g. promotion of greater energy efficiency, reduction of fossil fuel use, promotion of clean (vehicle) technology and low-carbon fuels, modal shifts, and decoupling of demand for transport and economic growth.

Others express their doubts about the actual contribution of biofuels to the three policy objectives of the EU, i.e. reduction of GHG emissions, improvement of security of supply, and contribution to rural development. They argue that these goals should be targeted specifically instead of promoting biofuels as such, because biofuels promotion does not guarantee that these objectives will be met. The performance of biofuels should be evaluated against these targets, and their contribution to them is considered more important than their actual volume. Other alternative fuels with low/zero emissions should be considered as well.

Both NGOs and private citizens express their concerns about the sustainability of biomass feedstock production (i.e. competition with food production, deforestation and biodiversity loss) and the environmental impact of biofuel use. From their point of view, the sustainability of biofuels should be guaranteed in order to make their promotion a valid objective. Some NGOs also mention that the use of biomass in the heat and power sector is more cost-effective in the view of GHG emission reduction. From an environmental point of view, several respondents also mention the importance of the second generation of biofuels.

The latter argument is backed up by some research institutes, arguing that promotion of the first generation of biofuels is valid as a step towards technological development of the second generation, which will increase the supply and impact of biofuels in the future.

Section 2 - Prospects for biofuels' market share in 2010

Question 2.1

With existing policies and measures, will biofuels achieve a market share of 5.75% in the European Union by 2010?

The vast majority of all respondents state that the 2010 target will probably not be achieved given current policies and measures. Some member states have high ambitions and may be able to reach their national targets, but others have set targets (much) below 5.75% or have not declared their intentions at this point in time. Additionally, many Member States have not yet formulated national policies that will guarantee compliance with their 2010 target. Moreover, time is limited to build additional production capacity required to achieve this target. Some stakeholders consider the contribution of biofuels to the EU objectives (reduction of GHG emissions, improvement of security of supply and contribution to rural development) to be more important than the actual market share that biofuels will realise by 2010, and stipulate that this should also be reflected in the setting of targets.

Due to an overlap in responses to Question 2.1 and 2.2, additional factors hindering the realisation of the 2010 target are summarised under Question 2.2 in Table 1, showing the obstacles to biofuels development in the EU.

Question 2.2

What are the main factors favouring the development of biofuel use in the EU? What are the main obstacles?

The main factors favouring and hindering the development of biofuels in the EU mentioned by the stakeholders are summarised in Table 2. In the Table, a distinction is made between factors that were mentioned by a number of stakeholders, and factors that were mentioned by only one or a few stakeholders. The latter category is indicated in *italics*.

Table 2 - Factors favouring and hindering the development of biofuels³

	Factors in favour	Obstacles
Economic/ market	<ul style="list-style-type: none"> • High price of fossil fuels • Concerns about fossil fuel supply security • Economic savings from avoided oil imports • EU diesel shortage (for biodiesel in particular) • Economic development and employment (in rural areas) resulting from biofuels introduction • Competitiveness of EU industry • <i>Existence of interesting markets for biofuel co-products</i> 	<ul style="list-style-type: none"> • Cost of biofuels production • Investments required for biofuel plants and need for long-term certainty to the market • <i>Limited desire from oil majors to include biofuels</i> • <i>Limited participation by certain car manufacturers</i> • <i>Lack of internalisation of external effects in prices of fossil fuels</i> • <i>There is no free movement of biofuels and fuels containing biocomponents</i>
Political/ regulatory	<ul style="list-style-type: none"> • Strong political support • Coordinated policy frameworks* • Mandatory biofuel (blending) targets* • Tax incentives • Lower/zero tariffs on imported biofuels* • <i>Benefits for biofuel cars (free parking, no congestion fees, etc)</i> • <i>Obligations for car manufacturers to produce vehicles capable of running on 100% biofuels</i> 	<ul style="list-style-type: none"> • Uncertainty for stakeholders about future national and EU policy framework (>2010) • Differences in national biofuel policies (lack of harmonisation between MS) • Lack of mandatory (blending) targets • Fuel quality standards limit the blending of biodiesel and ethanol to 5 vol-% (EN590 and EN228) and limit the types of plant oil to be used for biodiesel (EN14214). • Lack of political commitment in some MS • Lack of regulatory framework assuring the sustainability of biofuels • <i>Budgetary limitations at MS level</i> • <i>Insufficient tax reduction in some MS</i> • <i>Import tariffs and trade barriers</i>
Social/ cultural	<ul style="list-style-type: none"> • Greater public awareness* 	<ul style="list-style-type: none"> • Lack of public awareness in some MS • <i>Lack of a European biofuel marketing strategy promoting biofuel as a better quality fuel towards consumers</i>
Technical	<ul style="list-style-type: none"> • Blends with fossil fuels for use in existing vehicles to facilitate market introduction • Availability of Flexi-fuel vehicles* • Development of new technologies 	<ul style="list-style-type: none"> • Difficulties in blending (e.g. bioethanol Reid Vapour Pressure) and handling of biofuels • Focus on low blends, ignoring opportunities for high blends
Environ- mental/ sustainability	<ul style="list-style-type: none"> • Need to reduce greenhouse gas emissions (Kyoto protocol) • Need to reduce other harmful emissions such as particulates • Future improvements in GHG emission reduction (second generation of biofuels) 	<ul style="list-style-type: none"> • Uncertainty of environmental impacts of producing and using biofuels • <i>Uncertainty about the outcome of the discussions on sustainability of the biomass production</i>
Feedstock	<ul style="list-style-type: none"> • Domestic feedstock supply • CAP reform/new sources of agricultural income/incentives for energy crop production • <i>Use of surplus crops</i> 	<ul style="list-style-type: none"> • Lack of indigenous feedstock production potential (especially first generation of biofuels) • Impacts on markets for raw materials used by other industries • Possible competition with food, raw material, and energy (electricity and heat) production • <i>(national) regulations prohibiting or discouraging the use of waste streams, such as animal fats</i>

³ The favouring factors indicated with an * refer to factors that could, in principle, stimulate the development of biofuels, but are not yet in place, or on a current level that could increase in the future.

Section 3 - Targets and support for biofuels

Question 3.1

Looking towards 2010, is the present European system of indicative targets and support for biofuels appropriate or does it need to be changed?

Almost all respondents agree that the current system needs to be changed. The general argument for change is that the present system of indicative targets is not achieving progress at the desired rate. A second argument is that the current system causes considerable disruption both within domestic markets and in the trade between the Member States. Some respond that the current system is appropriate but can be improved. For example, the Irish government considers the flexibility (needed because of natural limits on indigenous biofuel production, and for freedom of choice between competing demands for biomass resources) an important benefit of the system. However, if the system of indicative targets is maintained, the principle of derogation needs to be clarified. The Danish Government also calls for a clarification of the difference between the current references values and guidelines and binding commitments, as they believe that the Commission and the Member States currently have a very different interpretation of the Directive.

Several NGOs and private citizens argue that the support of biofuels should be suspended and completely revised after thorough assessment of the sustainability of biofuels. One respondent suggests consulting the American Energy Act of August 2005 for alternative methods to support biofuels.

The main changes proposed are:

- Inclusion of mandatory targets, included in Section 3.2.
- Inclusion of sustainability criteria for biofuels, further described in Section 4
- A better harmonisation of targets and measures of Member States in order to create a common market for biofuels, because the current policy diversity creates market distortions. This is a point stressed by many respondents from all categories.

Other changes proposed are described in Section 3.4.

Question 3.2

What are your views on the advantages and disadvantages of the options described in section 3.2 of this paper?

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Question 3.3

How should the option(s) you favour be put into practice?

Option A: The biofuels directive is amended to fix targets for each Member State. These targets are mandatory – that is, failure to achieve them automatically places the Member State in breach of Community law.

This is the most favoured option of options A to C. Proponents mention that only mandatory targets can guarantee that the goals will be reached. They claim that indicative targets do not deliver the necessary sense of urgency and encourage free-riders. NGOs, but also several stakeholders from industry argue that if there is a common feeling that incorporating biofuels is a collective responsibility, no opt-outs should be offered. One respondent argues that it is vital for any mandatory target to include derogation from compliance in the event of a crisis in feedstock supply for food/feed uses.

Opponents are mainly NGOs and some Governmental bodies. The UK and Dutch government and UK House of Lords argue that mandatory targets remove the flexibility required to ensure that the Directive is adapted to the circumstances (natural resources, competition with other bioenergy uses, etc) of each Member State. This is backed up by the Irish government, which questions the capacity of individual Member States or EU as a whole to produce sufficient feedstocks for ambitious targets. If the EU is obliged to import significant amounts of feedstock, benefits in terms of security of supply may become substantially eroded. Some stakeholders argue that mandatory targets are not feasible due to scarcity of biofuels. The Slovak government points out that this measure will lead to separate national biofuel markets, certainly in the case of scarcity of biofuels, because every government will focus its policy measures solely on its national market in order not to breach community law. Several NGOs do not want a mandatory system as long as there is no framework for sustainability of biofuels.

It is not clear whether all of the respondents have noticed that option A can result in different targets for different Member States. However, unasked, most respondents favour equal targets for all Member States in order to have equal burden sharing. A few respondents mention that aiming at different targets would be politically challenging to reach agreements upon with all Member States and could easily result in a time-consuming process.

Option B: The system of fixing national indicative targets is retained. The biofuels directive is amended to state explicitly that, once fixed by Member States, these targets are mandatory.

Only a few respondents favour this option, with many rejecting it. One proponent argues that it is both flexible and coercive, which means that it is effective. Opponents argue that this is only a slight deviation from the current system, which is, according to them, not achieving progress at the desired rate. Furthermore, they consider this option likely to lead to conservative target setting, which will hinder the development of biofuels. Besides, it is argued that disparity of the national objectives will lead to reduced effectiveness in term of energy independence and reduction of GHG emissions. Therefore, the option should at least include a justification requirement of the national objectives.

Option C: The system of fixing national indicative targets is retained. The biofuels directive is amended to define more precisely the circumstances under which these targets may differ from the reference value.

Several respondents favour this option, including the Latvian government, but more oppose to it. The advantage would be that it retains the flexibility required to ensure that the Directive is adapted to the circumstances (natural resources etc.) of each Member State. On the other hand, many argue that it does not provide sufficient impetus and is unlikely to deliver the overall objective. Further, establishing a set of criteria will likely be (too) complicated. Also, the option currently lacks a clarification of the consequences in case the Commission does not accept a Member State's justification for deviating from the reference values. The Irish government suggests that, for the avoidance of doubt and misunderstanding, the article (4.1) in the Directive on possible grounds for differentiation of national targets as compared to reference values should be amended. If the Directive is amended in such a way as to make the elements in paragraph three of this article the sole grounds on which differentiation may be based then such grounds should be expanded.

Option D: The biofuels directive is amended to require Member States to use biofuels obligations (requiring fuel suppliers to incorporate a given percentage of biofuel in the total amount of fuel they place on the market) as a tool to achieve national targets.

This is by far the most preferred option of options D to H, although there are also more than a few respondents rejecting it. Positive reactions argue that an obligation creates a market in the most

cost-effective way, that it provides flexibility to fuel suppliers, and that it is an effective tool as long as buy-out penalties are sufficiently high. Of the governmental reactions, positive about this option are the UK House of Lords and the French, Latvian, Slovak and Dutch government. The UK government favours obligations for its national policy, but argues that other member states should be able to choose the instruments they prefer. The Austrian ministry favours harmonised tax reduction EU-wide; the German Energy Agency fears that an obligation requirement will be hard to realise EU-wide, and stresses that tax reduction should remain possible. The Irish government sees the advantages of an obligation scheme (certainty in achieving targets, longer term certainty for market players) but is concerned about the administrative complexity of such a scheme, particularly if a trading scheme element is introduced along with a certification scheme.

Several respondents rejecting this option and obligations in general expect that it will create monopolies (i.e. biofuel monopolies by oil companies), preventing competition and environmental effectiveness. Furthermore, they argue that an obligation would distort the market for raw materials for other purposes than biofuels. Also, it would give no freedom to the countries that have domestically found effective policy measures. Others expect that an obligation will end the use of pure or high-blend biofuels.

Option E: A biofuel obligation is imposed at Community level on each fuel supplier.

Although several respondents favour this option, there are more negative reactions. This option could give maximum flexibility to the EU oil industry in choosing where to supply biofuels, and to be cost-effective in terms of delivering greenhouse gas savings. Arguments against the option are that it is a too strong intervention and that it leaves no freedom for the countries that have already found effective policies. The Irish government is also concerned that a Community level obligation would lead to a situation where suppliers would source biofuels from outside Ireland and the EU thus undermining these objectives of Ireland's energy policy scheme, which emphasises domestic production of biofuels. Furthermore, it is argued that it would require a significant increase in EU capabilities (controlling and enforcing) and this may be a function that is better carried out at MS level under EU supervision. Some critical respondents, including the Slovak government, do see potential in this option, but only on the longer term. Concerning the implementation of this option, some respondents wonder if and how this measure could be introduced legally. One suggestion is for the European Commission to carry out a detailed feasibility study into the possibility of imposing a biofuel obligation at Community level on each fuel supplier. This would need to address the costs and benefits of such an approach, as well as the options for the detailed design of a possible obligation.

Option F: The fuel quality directive is amended to permit Member States to impose mandates on fuel suppliers (laying down a minimum proportion of biofuel to be contained in each litre of fuel sold). Here the comment should be made that without EU harmonisation of the minimum proportion, this risks to create a serious internal market barrier.

Most reactions to this option are negative. Respondents use arguments such as lack of flexibility, economic and environmental inefficiencies, distortion of competition, risk of internal trade barriers, fragmentation of the market and unnecessary cost. Advantages mentioned are the lower administrative burden as compared to an obligation and the greater market certainty.

Option G: The fuel quality directive is amended to require all fuel sold in the EU to contain minimum proportions of biofuel (a European mandate).

Many respondents are in favour of this option, but approximately an equal amount opposes to it. Proponents argue that this is the most effective policy instrument, proven by experience in Brazil and the USA. One respondent adds that it is also the most compelling policy instrument and that it should therefore only be used beyond 2010. In addition, proponents see it as a good option to maintain a homogeneous European fuel quality and to share the burden among Member States.

Opponents argue that the lack of flexibility could be problematic to fuel suppliers and is likely not to be the most cost-effective way to achieve the target. They are also concerned for the many businesses (not specified) across the EU that are already running vehicles on pure or high-blend biofuels. Furthermore, it gives no freedom to the countries that have domestically found effective policy measures. Some respondents expect that this option will create monopolies preventing competition and environmental effectiveness. Oil companies from Nordic countries also expect technical problems concerning the fuel quality in cold weather conditions.

Option H: The Commission attempts to negotiate with the oil and vehicle industries a voluntary agreement to achieve the 5.75% reference value.

There is hardly any positive reaction for this option. Most respondents have no confidence that this option would help achieve the 5.75% and see this as a step back from the existing Directive. Some call it unworkable, since policy must include an incentive to comply, something a voluntary approach cannot deliver. Several respondents mention that there is already support for biofuels from the vehicle industry, although others do not consider it sufficient yet.

Option I: All fuel is labelled to show the proportion of biofuel it contains. (At present, only fuel with a biofuel content above 5% has to be labelled.)

Many respondents support this option, but see it only as a complementary measure. However, many others do not see the need, at least not for blends below 5%. The proponents argue that this would raise public awareness and improve transparency for consumers. The opponents argue that it is an administratively very burdensome and costly option and that the consumer normally does not really care. Further, some respondents say that the labeling should concentrate on the CO₂ reduction and sustainability of the fuel and not on the biofuel content. A few stakeholders mention that a labelling system preferably should be uniform in every country.

Option J: A campaign is organised to inform consumers of the benefits of biofuels.

Almost all respondents welcome this option, but see it only as a complementary measure. Several respondents however add that this could be very expensive and might not achieve value for money. The UK government adds that initial evidence suggests that consumers have limited interest in biofuels issues.

Concerning the implementation of this option, one respondent (*not an NGO*) suggests that the EU should finance Non Governmental Organizations to carry out this task in order to guarantee the objectivity of information. Another says that any campaign should be organised in a way that all relevant stakeholder participate in the communication.

Question 3.4

Should other options than those in section 3.2 be considered?

Many respondents bring up with the issue of (non-EU) imports, although their views and proposals differ widely, e.g.:

- No restrictions on import, inter alia supported by industries using the same raw materials as the biofuel industry.
- No new protections, i.e. no change in the present EU tariff protection apart from those resulting from WTO negotiations.
- A balanced import system to avoid disruptions in the nascent EU fuel ethanol industry.
- The adoption of ‘defence mechanisms’ against imports that are supported by distortive export instruments such as differential export taxes and export tax exemptions.

Further, several respondents (mainly stakeholders in the bioethanol or feedstock industry) are of the opinion that, next to consumption, the production of biofuels in the EU should be promoted (more) as well. Their arguments are a better insurance of security of feedstock and fuel supply, and the need to find alternative outlets for a reformed EU agriculture.

Other options/issues mentioned include:

- A CO₂-based taxation scheme for biofuels, in which the taxation of biofuels is proportionate to their 'net CO₂ emissions' in comparison to the conventional fuels they are substituting.
- The use of biofuels in high concentrations in captive fleets, according to the directive proposal for environmentally enhanced vehicles, should be taken into account.
- Adopt a uniform system for all biofuels, e.g. by adding to the Directive that 'no Member State can ban any biofuel that is mentioned explicitly in the list of the biofuels in article 2.2'. This issue is brought forward mainly by stakeholders in the plant oil industry, with the argument, next to their claims of other advantages of (certain) pure biofuels, that excluding the use of specific (pure) biofuels demotivates enthusiastic pioneers and entrepreneurs.
- Encourage both low blend *and* high blend biofuels. High blend biofuels engage the consumer and media far more effectively than the passive low blend approach, and engagement of consumers and media is key for an aggressive move towards tackling the challenge of climate change (several car manufacturers).
- Replace 'or' in article 1 of the Directive by 'and': 'This Directive aims at promoting the use of biofuels or other renewable fuels to replace diesel ~~or~~ and petrol for transport purposes..' (by stakeholders involved in bioethanol production).
- Include separate obligations for biofuels replacing diesel and petrol. This is brought forward mainly by stakeholders involved in bioethanol production. Several actors in the oil industry/fuel supply oppose to such a separation, and one of them argues that the overcapacity of petrol production in Europe should be taken into consideration when setting targets for biofuels. This is also proposed in the UK House of Lords response.
- Vehicle manufacturers should be obliged to offer vehicles on the EU market that are capable of being fuelled with pure biofuels, this option to be combined with a suitable support for vehicles manufacturers.
- Maintain or strengthen the support in the Directive for other renewable energy use for transport (other than biofuels), such as the use of renewable electricity for transport purposes.
- Improving the European EN fuel standards substantially in order to make higher blends than 5% bioethanol or biodiesel possible.
- Co-ordination of biofuel policy and regulation for emissions such as unburned hydrocarbons or VOC's (Volatile Organic Compounds) in order to find and make use of synergies.
- Stimulate innovation and encourage future developments, support for second generation biofuels. This is also proposed by the Irish government.
- An EU harmonized taxation scheme for biofuels.
- Higher taxation on energy and materials (from fossil sources) used for the production of biofuels, i.e. basically higher energy taxation in general. This would provide a greater incentive to produce biofuels using more efficient and sustainable methods.
- Enhanced training and education supports

Question 3.5

If your preferred option(s) would have implications for granting tax reductions/exemptions for biofuels, for example if these fiscal measures had to be prohibited, would that change your answer?

The Latvian government responds positively to this question, as it sees tax reductions as the main support instrument to promote biofuels. Most other respondents have not answered this question directly, mainly because they do not have the knowledge of the cases to which this applies. Two respondents argue that legislation should be modified to allow the pursuit of the best course of action, rather than taking an inferior course of action to work around inconvenient existing

legislation or regulation. The Slovak government suggests to use tax differentiation or penalties instead of tax reductions/exemptions to circumvent this issue.

Question 3.6

Should Member States be able to provide tax reductions/exemptions and lay down biofuels obligations at the same time – or should it be “one or the other”?

Respondents are much divided over this question. Several respondents object obligations in general, most respond that Member States should be allowed to use both simultaneously and a smaller group prefers obligations only. These views are also divided over respondents from all different groups, although most actors in the biofuel industry generally do not want to see an end to tax reduction/exemptions. Several arguments given for the different options are listed below.

Arguments used in favour of detaxation (whether or not combined with an obligation):

- Biofuels should not be taxed as they are renewable.
- Tax reductions/exemptions can be a very visible way of stimulating the market.
- Tax matters are for national Governments.

Arguments used in favour of obligation, but against detaxation:

- In principle, where there is a biofuel obligation there is no need for a tax incentive.
- Tax reductions/exemptions are inherently inefficient as the cost is borne by the general taxpayer, rather than the user of the fuel.
- In an obligation system the polluter pays⁴.
- Tax reductions/exemptions distort the market (e.g. risk of overcompensation) and make it less transparent: the different tax reductions/exemptions regimes in different countries cause feedstocks for biofuels to be sold to the country with the highest tax reductions. If tax reductions/exemptions will continue to be used, there is need for a EU-wide level playing field.
- Tax exemption does not provide long-term market certainty since there is a six year restriction on the application of such exemptions.

A few stakeholders suggest only to give a tax exemption when a company fulfils more than its obligation, or apply it to biofuels with a better environmental and/or CO₂ performance. The French government would like to retain a tax exemption, next to the option of an obligation, also with a view to these purposes. Further, several respondents argue that it would be counterproductive to stop national strategies that are based on a combination of the two measures. When obligations are introduced, they propose at least a transition period, because of investment security. This is also suggested in some governmental reactions. In this period, tax exemption can also be considered a back-up in case the introduction of an obligation system does not go smoothly.

⁴ Respondents are also divided over the (unasked) question of who should pay for the extra costs of biofuels: the tax payer or the motorist, although the majority favours the latter. They mostly do agree that there should be equal burden-sharing between Member States, e.g. by having the same target.

Section 4 - Certification of Biofuels

Many respondents bundled their replies on questions 4.1 and 4.2. Here, we have tried to split the arguments on sustainable feedstock production (4.1) from certification of fuel chains (4.2). However, many arguments mentioned in one section can also be relevant to the other.

Question 4.1

Should there be a system – for example, a system of certificates - to ensure that biofuels have been made from raw materials whose cultivation meets minimum environmental standards?

If so,

- **What should be addressed in the standards?**
- **How should the system work? Are there good models to draw on?**
- **Should the biofuels directive be amended so that only biofuels which comply with environmental sustainability standards count towards its targets?**

Feedstock sustainability criteria: yes, but it's complicated and multi-dimensional

Generally, the need to guarantee sustainable raw material cultivation is approved of. This is interpreted in a broad sense, i.e. not only in terms of cultivation with minimum environmental damage, but also in terms of prevention of land use change impacts such as deforestation and interactions with food production, especially in developing countries. Many NGOs stress that alarming information on such issues may rapidly reduce public support for an offensive biofuels policy. Therefore, their ambition level for certification generally is also higher. A major part of the group of citizens that responded pleads for a moratorium on biofuels and biofuels feedstock imports, until we can provide certainty that these will not cause deforestation and food shortages in providing countries.

The issue of feedstock sustainability is generally agreed on, and certification as a tool is not much debated. However, Unilever, also executive board member of the Roundtable for Sustainable Palm Oil (RSPO), provides some fundamental criticism: “Sustainability certification for biofuel feedstock addresses (micro)production circumstances only. The real sustainability issue of current biofuel use is that it leads to a (macro-) expansion of feedstock production. Certification will not change the fact that for each ton of oil that is made unavailable for traditional users an additional ton of oil needs to be grown elsewhere.” Therefore, Unilever claims that a sustainability assessment should take into account at least the previous land use and the traditional end-use of the crops produced.

Furthermore, a number of respondents indicate that it does not seem very useful to develop specific certification for biofuel feedstocks if the same feedstock does not have to be certified when applied for food, feed or other purposes. Certification of feedstocks for biofuels, therefore, should at least strive for such a wider harmonisation.

Differences between EU-produced feedstocks and imports:

Many respondents discern raw materials produced within the EU from materials produced in other countries.

For *EU feedstocks*, many respondents related to primary production indicate that there is an EU Common Agricultural Policy, including cross-compliance and Good Agricultural Practices. They state that there may be criticism on the policy, but that it is not useful to independently develop new criteria for biofuel crops. Others say that, if there would be need for extra criteria, this will be relatively easily implemented, compared to imports.

Sustainability of *feedstock imports* receives much more attention in the responses. On one hand, certification is more important because the environmental risks are perceived as being larger, on the other hand it is more difficult to implement in foreign regions. Again, it is stated by some that such a certification should e.g. address all palm oil imports, not only the imports for biofuels. And there are issues on land use change and competition for food.

Note, however, that Europe's main foreign biofuels supplier, Brazil, states in its response that WTO rules prevent sustainability criteria only to be developed for imports, since this can be regarded as an illegal trade barrier.

Issues to be addressed in the standards

Not too many respondents went into such detail as to specify these issues. Roughly, the following criteria were mentioned by those who did:

- Conservation of carbon stocks;
- Conservation of biodiversity and landscape;
- Sustainable use of water resources;
- Maintenance of soil fertility;
- Good agricultural practice;
- Waste management;
- Avoidance of conversion of natural ecosystems;
- Avoidance of competition with food and fodder cultivation;
- The (non-)use of GMOs (mentioned by NGOs mainly).

Some respondents also mentioned social criteria, such as land property rights of local inhabitants.

Models to draw on

Many models were mentioned here

- The FSC label, although for biofuels the system should not be voluntary;
- RSPO, IFOAM, EUGENE, WWF-World Bank Alliance;
- ISO 14000, SA 8000;
- Organic agriculture and their corresponding certification labels;
- Green Gold label developed by Dutch electricity company Essent;
- Options for sustainability certification described by Ecofys in a report for Ireland ("Policy incentive options for liquid biofuels development in Ireland", p.45-49).

Development and implementation issues

A small minority of mainly biofuels industry indicates that a system ensuring feedstock cultivation is too complicated and cannot be implemented. The Latvian government holds this opinion specifically on the use of certificates. Many others warn for too complex systems and stress that a certification system should be:

- Non-discriminatory;
- Robust;
- Transparent;
- Practicable;
- Non-bureaucratic;

A frequently occurring remark is that certification should start with method development and data gathering, and that first priority should be to acquire a robust and reliable system. If that is in

function, minimum targets or standards can be set. Another remark often made is that criteria should be developed in close cooperation with stakeholders

Finally, note that a small number of respondents misinterpreted this question and dwelled on the necessity of biofuel quality certification as a fuel.

Question 4.2

Should a wider system of certificates be introduced, indicating the greenhouse gas and/or security of supply impact of each type of biofuel?

If so,

- **How should this certification system work?**
- **How should the greenhouse gas and/or security of supply benefits of different biofuels be measured?**
- **Should biofuels with good greenhouse gas and/or security of supply performance be rewarded within biofuel support systems for biofuels? If yes, how?**

Many respondents combined their answer on these questions with 4.1. The general opinion is that certification on full-chain performance of biofuels would be better than certification of feedstock production only. Again, many NGOs and private parties consider this a *conditio sine qua non* for a sustainable future of biofuels. Compared to feedstock certification, more industrial parties consider full-chain certification to cause an intolerable increase in biofuels costs, due to administrative burdens. Generally, full-chain GHG or SoS assessments are more complex than feedstock assessment only, and therefore it will be more difficult to develop a well-implementable method. On greenhouse gases, many parties stress that all greenhouse gases should be taken into account, and that e.g. N₂O emissions are still hard to assess. Some parties indicate that Security of Supply is still such an ill-defined concept that it will not be possible to develop objective criteria to assess biofuel chains on this issue.

One or two respondents warn that, apart from GHG emissions and SoS, the third driver for biofuels (economic development for rural areas and industry) should not be forgotten.

Again, many parties from industry, and the UK and Dutch government, argue that the first step towards setting standards should be the development of a monitoring scheme, which would need sufficient time to pass the introduction hurdles. Otherwise, certification may cause significant insecurities and thereby hamper the flow of investment funding into the sector.

Methods and tools

- LCA was generally mentioned as a tool, preferably on a ‘soil to wheel’ basis.
- RECS/AIB, the UK ROC system and the Swedish Elcert systems were proposed as models to draw on
- For CO₂ calculation: the CONCAWE dbase, the UK LowCVP model, and a Canadian tool (www.ghgenius.ca)

Differences between respondents

- For many (environmental) NGOs this is an important point, and their ambitions are generally higher than those of e.g. industrial partners. Many warn that public support for biofuels may wane on report of tropical deforestation due to biofuels.
- Citizens have most concerns about deforestation impacts, and therefore strongly support certification and other approaches to minimise these impacts. Some even plead for a moratorium on biofuels until appropriate measures preventing deforestation have been implemented.
- Governments: Germany, UK and the Netherlands favour certification on WTW basis, on an EU level. Brazil has some comments: biofuels and fossil fuels should be treated equally, they

introduce the WTO considerations, and the need to prioritise CO₂ performance of biofuels over their economic benefit for (EU) rural areas.

Other comments

- For certification, it is important to define the baseline, and how does this develop as we use fossil resources more energy-intensive to exploit;
- Apply the system to all EU countries, please, for trade and competition reasons;
- Many responses stress that a certification scheme should be the result of an interactive multi-stakeholder process.

Most detailed and to-the-point comments on questions 4.1 and 4.2:

- In the UK (LowCVP), the Netherlands and Germany certification systems are currently under development. An EU system might be developed from these initiatives. The LowCVP argues that a proper certification or standardisation system starts with proper reporting. Furthermore, current WTO restrictions imply that the system should be voluntary. LowCVP also argues that assurance schemes are not a guarantee for responsible cropping, since they are mainly focused on food safety, they cannot prevent deforestation impacts, and do not take socio-economic and socio-environmental issues into account. The LowCVP list of reporting criteria is included in Annex 1.
- The Dutch draft list of certification criteria is also included in Annex 1. The response also mentions WTO requirements as a possible restriction to an obligatory certification scheme. Like the LowCVP, the Dutch also mention the CEN as a useful partner in certification scheme development, and indicate that a European-wide authority should be responsible for the maintenance of the scheme and underlying tools for e.g. CO₂ calculations.
- WWF has a very extensive discussion on this issue, not surprisingly because WWF have been actively involved in a number of certification development processes, such as the RSPO, FSC, etc. Their main concerns to be addressed by certification are:
 - *Where biofuel feedstocks are produced*: ensuring the integrity of high conservation value forests, floodplains, natural and semi-natural grasslands as habitats and the needs of the biodiversity they harbour;
 - *How biofuel feedstocks are produced*: using agricultural and forestry management techniques that can guarantee the integrity and/or improvement of soil and water resources;
 - *The GHG emissions and carbon losses in how biofuels are produced, processed and distributed*: ensuring that the technologies and management systems applied comply with good practice and can demonstrate they deliver savings over conventional fuels;
 - *GHG accounting “leakage”*: ensuring that biofuels imported and used in Europe (and thus contributing towards GHG emissions reductions in the EU) fully account for the GHG and carbon life-cycles also for the processes which occurred outside of the EU23;
 - *Food, land and water displacements*: an issue of particular concern in the third countries with which the EU will trade in biofuels.

A specification of how these issues could be addressed is included in Annex 2.

Question 4.3:

Should there be a scheme to reward second-generation biofuels (made with processes that can accept a wider range of biomass) within biofuel support systems?

A large majority of the respondents state that second generation biofuels are still in their R&D phase. When introduced to the market, these fuels should be able to prove themselves more sustainable when certification as discussed in questions 4.1 and 4.2 is developed. They conclude that a specific scheme rewarding second-generation biofuels only would not be appropriate.

Many stress that EU policy should not be technology-specific, but should enhance fuels that prove to be contributing most to the decrease of CO₂ emissions and the improvement of security of supply. This is also in line with a level playing field for all biofuels.

If second generation biofuels are promising, their introduction may be enhanced by support in research and development, so indicate many.

Section 5 - Beyond 2010

Question 5.1

Should the EU continue acting in favour of biofuels after 2010?

All industry says yes, including industry not directly related to biofuels. The latter often state that the way the EU acts in favour of biofuels should be made less disturbing for e.g. other sectors using biofuel feedstocks. The dominant argument favouring longer-term EU support for biofuels is that investment decisions to be taken now will have most of their impacts after 2010. A continuing supportive policy would therefore enhance opportunities for biofuels, also for the shorter term.

The picture among NGOs is more complicated: many are in favour, and also recognise the need for investment security, but a number of considerations are mentioned, especially certification and/or setting the target on GHG emission reduction instead of biofuels as such. In this, the comments of the NGOs are in line with their suggestions on questions 4.1 and 4.2. Some other NGO's simply argue that it is premature to set new targets for beyond 2010 and that an assessment of the positive and negative effects of biofuels must be carried out first.

Citizens are more reluctant: most say no, unless we can develop a system for sustainable biofuels, without market disturbances and deforestation, etc.

Most governmental institutions say yes, but the Netherlands and the UK only support this development under a number of sustainability conditions, at acceptable cost and considering competition impacts with other biomass-using sectors.

Question 5.2

If the EU is to continue acting in favour of biofuels after 2010, should this action include or exclude the definition of a quantified target for biofuels?

Again, the biofuels industry says yes. In the motivation for the positive answers, arguments mentioned earlier are repeated: the drivers for biofuels (GHG and SoS concerns, as well as economic development) are increasingly strong, and a long-term target creates a horizon for investment decisions. Furthermore, the target also sketches the future fuels that car manufacturers will have to deal with, adds one of the respondents. Some, however, plead for an overall assessment of biofuels impacts on land use, environment and other markets before setting new targets. These reactions primarily come from industry parties not directly involved in biofuels (e.g. the industries competing with biofuels for feedstocks, or experiencing other market disturbances due to the biofuels policy). One or two biofuels industry parties propose to extend the biofuels target to include air and water borne transport.

Of the NGOs, many plead for setting the target in terms of fossil energy saving or GHG emission reduction, thereby strengthening the link between the key drivers for biofuels (as they see them) and the way targets are set.

Of the governments the Slovak, Latvian, French, Irish and UK government favour new targets. However, according to Latvia and the UK they should be non-binding and the UK wants the targets to be related to GHG emission savings. The Netherlands states that it is too early to set a target now, given the problems with meeting the 5.75% target. The Irish government claims that the establishment of targets should therefore have regard to the difficulties, which individual Member States have already encountered, and states that any proposals to revise targets should be fully debated so as to establish balanced and reasonable objectives that reflect the position of

individual Member States. The Danish government believes it is pointless to set new targets prior to an analysis by the Commission on the viability of a new target with a view to its cost-effectiveness.

Question 5.3

Should EU action include the following measures (which could be pursued without defining a quantified target):

a) support for research, development and dissemination of good practice?

Often mentioned in the context of enhancing the development of 2nd generation biofuels, by all parties.

b) continued Community financial support for the supply of biofuels and their feedstocks?

Some respondents state that this support is not in line with the general trend in the CAP (decoupling) and may conflict with WTO restrictions. NGOs are generally more negative on this measure than industry, of which most find this a useful instrument. Some industry parties (particularly related to feedstock) indicate that the feedstock support should be extended to the New Member States.

c) continued scope for Member States to support biofuels through tax reductions/exemptions?

The answers on this question are mixed, generally in line with the difference among member states in preference between tax reductions and obligations. For example many German industrial parties state that there should be place for tax exemptions, while many UK industry respondents stress the usefulness of obligations. Tax reductions are clearly less favoured by NGOs, who have a preference for obligations.

Of the governmental respondents, the Irish government is in favour of continuation and enhancement of such support. The UK government suggests to keep this option possible, also to prevent lock-in into current biofuel feedstocks and technologies, which may impede the development of new biomass feedstocks and conversion processes. The Netherlands reaction suggests to keep tax reductions possible until 2010 for the entire biofuel market; afterwards tax reductions should only be allowed to stimulate and introduce innovative fuels (of which some in specific fuel/vehicle combinations) such as E85, FT-diesel and cellulosic ethanol. The Slovak Republic believes that national tax exemptions have a negative impact on the investment climate and that effective tax differentiation could be applied at EU level.

d) the labelling of all fuel to show the proportion of biofuel it contains?

A majority of industry is negative on this, regarding it complicated and not too useful for low blends. Many others have no comments on this measure. Only some NGOs consider this a possibly useful measure, to be combined with an information campaign (measure e).

e) a campaign to inform consumers of the benefits of biofuels?

The vast majority finds this a useful idea. However, given the limited amount of supportive argumentation, it seems that the measure does not have strong priority. According to industry, an information campaign should be aimed at providing a public platform and support basis for biofuels.

f) any other options?

Some other measures were proposed:

- Anticipation on and solution of implementation barriers, such as inhibitive criteria in fuel quality directives.
- Quality standards and certification for feedstocks and biofuels imported, on sustainability but also on quality.

- Specific procurement of high-biofuels prepared vehicles.
- Emission-oriented fuel taxation.
- A (mid- or long-term) obligation for car producers to make all vehicles suited for B100, E100, and all blends in-between. A PPO industry party suggests the same for 100% PPO.
- Co-ordination of activities and policies across bioenergy and biomass-related sectors to advance the biofuels agenda, taking into account competing demands for biomass

Question 5.4

If the EU is to define a quantified target for biofuels after 2010, what should it be? What year(s) should it relate to - 2015? 2020? Both?

The biofuels industry clearly says yes, and many propose targets in the following band with:

- 2015: from 8% to 15% (8% mentioned most, by which many refer to a statement by the EU heads of State).
- 2020: from 12% to 25%, most advises lying between 15% and 20%.

Except from the 8% 2015 target, these figures are generally not related to specific literature sources or forecasts.

Within the biofuels industry, parties related to bio-ethanol appear to be the most ambitious, with 2020 targets of 20% and higher. One respondent pleads for a longer time span (2030), with a target of 75% in 2030. This with the argument that induced cost increases for fuels will trigger energy efficiency of vehicles and shifts to more energy efficient transport modes, thereby reducing fuel demand. The PPO respondents also mention targets of >25%. On average, the biodiesel-related respondents mention somewhat lower percentages (8-10% for 2015, 15-20% for 2020). Some explicitly mention that higher targets will lead to constraints in (domestic) production of feedstock. This may also be why industries related to feedstock production mention slightly lower targets (8% for 2015, 12-20% for 2020), although not all of these contributors mention this argument in this part of their response.

Industry not directly related to biofuels is more reluctant, and none of them mentions new target percentages. Some stipulate that we need to be nearer to 2010 to be able to set realistic targets for 2015 and beyond. Often, this is also attributed to uncertainties in the arrival of 2nd generation technologies. And others claim that such targets should be set after sound impact assessment. Finally, some claim that target levels should not unacceptably disturb feedstock and other markets now related to biofuels (varying from glycerine to molasses).

NGOs are critical to new target setting in the currently applied terms. For them, a redefinition of targets into GHG terms, and a more extensive impact assessment beforehand, are important issues to be addressed before setting new targets. Furthermore, some again mention the threat of deforestation in developing countries when (over-)ambitious new targets are set without a proper certification scheme in place.

Of the governmental reactions, the German energy agency, the Irish, and Latvian governments are clearly in favour of new targets (without giving quantification). The French government would like targets to be set at least 3-4 years in advance, but not before the Commission has reviewed the Directive. The Slovak government is also positive on new targets as long as this is preceded by a thorough analysis. The UK government and house of Lords reaction is in favour of a 2015 target (related to GHG savings), and considers 2020 too far away for formal, suited for more indicative target setting. It does not propose a specific share, but does indicate that new targets should be proposed parallel to revision of the currently incompatible fuel quality standards. The Austrian Environmental Ministry argues that specifically 2nd generation fuels and biogas should be enhanced, but does not speak about the target. The Dutch reaction states that it is too early for a new target, and first uncertainties should be reduced on feedstock availability (and prices) and the arrival date of 2nd generation technologies.

Question 5.5

If the EU is to define a quantified target for biofuels after 2010, should this be expressed in terms of

- **market share (as in the present directive)?**
- **greenhouse gas savings from biofuel use?**
- **reduced oil consumption from biofuel use?**
- **reduced fossil fuel consumption from biofuel use?**

Some industry respondents advocate a shift to GHG savings or reduced fossil oil consumption on the long term, but indicate this to be not yet achievable due to complexity and limited data reliability. Most find the current approach of market share on energy basis sufficiently suitable for now and the near future.

Most NGOs favour GHG savings or other terms more related to the problems that biofuels are intended to solve. They do not go into possible implementation issues due to complexity.

The UK and Dutch governmental reactions state that new targets should be formulated in GHG terms, and that the development of methodology and monitoring systems for such standards should now have high priority. The Irish, Slovak and French governments are proponents of the current system whereby targets are expressed in terms of market shares, since this appears to be the most straightforward and ensures that biofuels are placed on the market.

Question 5.6

If the EU is to define a quantified target for biofuels after 2010, should this remain a purely political step (accompanied by monitoring) or should it be given concrete form?

If the latter, should this be in the form of:

- a) **adding reference values for later years to the biofuels directive as presently drafted?**
- b) **drafted?**
- c) **one or more of the options in section 3.2?**
- d) **some other form?**

Most respondents refer to their remarks at question 3.2 and propose the measure they favour there. Some indicate on this question that energy efficiency should at least be equally stimulated as biofuels.

The UK government reaction repeats that the target should remain a reference value; the Dutch reaction prefers an obligation. The Irish government states that reference values beyond 2010 can only be set in the context of improved vehicle acceptance of biofuel blends. The French government prefers a concrete form by amending the Directive with new targets. The Latvian government prefers it to be a political step.

Section 6 - Technical issues on which comments are also invited

Only a part of the respondents (mostly industry and some NGOs and research institutes) has included these questions into their documents, and the ones that have addressed them have often not responded to all questions covered in Section 6. This section contains an overview of the suggestions made for technical issues.

Question 6.1

Comments on the following issues, listed in the biofuels directive for inclusion in the Commission's progress report

a) the cost-effectiveness of the measures taken by Member States in order to promote the use of biofuels and other renewable fuels?

Many stakeholders argue that the cost-effectiveness (costs and benefits) of all policy decisions should be evaluated. Since interstate comparisons may be difficult, this evaluation could be done by the member states, this does not necessarily have to be done on EU level. However, some respondents mention that it is too early to judge in some member states.

Some stakeholders specifically call for more harmonisation of biofuel policies (e.g. tax incentives; biofuel (blending) targets) in EU member states, thus creating a level playing field in the EU. In their view, the current variety and inconsistency of measures among member states are hindering the working of the internal market for biofuels.

Some stakeholders believe that flexible obligation schemes are the most cost-effective policies to promote biofuels, since these schemes allows fuel suppliers and other participants in the biofuels markets to develop lowest cost solutions, which should minimise price increases for consumers. However, other respondents argue that this is only the case in theory; there is no practical experience in the transport sector yet.

As part of policy frameworks, many stakeholders call for an evaluation of the cost-effectiveness of biofuels. The impact of using biofuels should be compared with the situation if biofuels were not introduced. The most important criteria mentioned are:

- GHG emission reduction;
- Energy supply security;
- Economic benefits for rural areas and for farmers;
- Impacts on markets of agricultural products and by-products of biofuel production;
- Creation of employment in EU;
- Health benefits;
- Trade benefits.

It is argued that biofuels should be seen as part of an overall package of measures to reduce the environmental impact of transport and the energy sector. Biofuels should also be evaluated in the context of other uses of biomass and the cost-effectiveness of these options in terms of GHG emission reduction. Several respondents state that, for reasons for limited indigenous resources, Member States should not be forced to apply policy incentives in favour of any one sector, where it could impact on the development of more effective measures in other sectors.

b) the economic aspects and the environmental impact of further increasing the share of biofuels and other renewable fuels?

Many stakeholders call for measures to be put in place to thoroughly evaluate the economic and environmental performance of biofuels, and stimulate the best options. Some respondents question the current environmental and economic performance of biofuels. However, most of them are aware that developing a methodology for this, which is agreed upon by relevant stakeholders, is a difficult and complex issue. Furthermore, there is concern that data on (future) impacts of biofuels are insufficiently available.

Other suggestions made are:

- The environmental impacts of biofuels could be evaluated as part of the development of sustainability criteria in order to minimize them.
- Impacts on world and local food supply should be considered. A balance needs to be found between supply of crops for food and for bioenergy.
- The interactions with existing and emerging markets for raw materials and agricultural commodities should be considered, since increasing use of biofuels may lead to distortions there.

c) the life-cycle perspective of biofuels and other renewable fuels [and] possible measures for the further promotion of those fuels that are climate and environmentally friendly, and that have the potential of becoming competitive and cost-efficient?

Stakeholders generally agree that a well-to-wheel environmental evaluation from a broad, macro-perspective is the most appropriate view to these issues, including also, for example, by-products and their use, and the net demand for external resources such as clean water and fertilizers. However, it is argued that LCA methodology still needs to be refined and sufficient reliable information must be available to identify the biofuels with the best environmental performance. To this end, it is suggested that an international CO₂ calculation tool should be developed. Some stakeholders argue that policies should be developed so that only biofuels, which meet certain minimum environmental criteria, can be counted against EU or national biofuel targets. A certification system could be used to give an indication of environmental impacts, possible also including other alternative fuels (electricity, hydrogen, natural gas, synthetic fuels). It is important to include the expert input of relevant stakeholders in such analyses.

d) the sustainability of crops used for the production of biofuels, particularly land use, degree of intensity of cultivation, crop rotation and use of pesticides?

Many stakeholders state that feedstocks as well as biofuels should be evaluated against a set of sustainability criteria, taking into account local conditions. Some of them see the emergence of a new industry as a unique opportunity to set new standards that could eventually be applied to the entire agricultural sector. The development of sustainability criteria is still at an early stage and it is currently being discussed on various levels, involving a variety of stakeholders. The following issues in developing sustainability standards are mentioned:

- GHG emissions
- Biodiversity⁵

⁵ The contribution of Birdlife International contains some additional comments regarding biodiversity and prospects for sustainable production (comment 39-60). The organisation expresses its concern about the amount of land required to meet longer-term biofuel targets. Land-use implications of high biofuel targets would not be constrained to Europe. For various biomass feedstocks, the organisation gives examples about the impacts on land-use and biodiversity (i.e. highly intensive monocultures, disappearance of natural habitats, deforestation, threatened species). The most immediate threat posed to biodiversity in the EU is the loss of set-aside land to bioenergy crops, since set-aside land provides important feeding and nesting resources for many farmland bird species. Although Birdlife International states that the current

- Impacts on air quality
- Impacts on agriculture;
- Efficient land-use;
- Environmental impact (e.g. use of fertiliser);
- Economic costs and cost efficiency;
- Impacts on food supply;
- Practical implications and compliance with sustainability standards.

e) the assessment of the use of biofuels and other renewable fuels with respect to their differentiating effects on climate change and their impact on CO₂ emissions reduction?

Although there are only few reactions to this issue, the GHG savings related to biofuels are generally recognized. Some stakeholders argue that the revised Biofuels Directive should address the impact of different biofuels technologies in terms of CO₂ savings. However, one of them states that the revised Directive should not be linked to CO₂ targets for new vehicles that the EU has to meet by 2010. These targets should be met only through car-related measures, and not through fuel measures. These measures should be additional to the increased use of biofuels, and double counting of GHG savings should be avoided.

f) further more long-term options concerning energy efficiency measures in transport?

Options suggested by the stakeholders are:

Transport system

- Mobility management
- Modal shift
- Linking biofuels to public transportation

Vehicles

- Vehicle efficiency measures
- Highly-efficient engines
- Concept of integration of fuel technologies with vehicle technologies
- Hybrid vehicles using biofuels
- Non-conventional engines (e.g. Stirling engines, micro turbines, electric engines)

Fuels

- Gasoline grades with a higher octane number (e.g. containing bio-ETBE or bioethanol), thus allowing higher compression ratios resulting in higher engine efficiency
- Renewable electricity
- Hydrogen (although at least one respondent is explicitly negative about this option)

Question 6.2

What are the prospects for second-generation biofuels that can be made from a wider range of biomass? Can they be expected to be cost-competitive with first-generation biofuels and if so by when?

The vast majority of the stakeholders argue that the (theoretical) prospects for second-generation biofuels are promising. The expected benefits claimed are:

- They have a more favourable GHG balance compared to most current biofuels.

development towards concentration of production is likely to have a negative impact on biodiversity, new bioenergy crops may offer opportunities with regard to biodiversity, i.e. higher density and variety of bird species.

- They can be produced at cost-competitive prices, especially if produced in large plants and if low-cost biomass is used.
- They are more cost effective than current biofuels regarding GHG emission reduction.
- They are able to use a wider range of biomass feedstocks (whole plants and residues)
- They do not compete for feedstock that is used for food production.
- They offer a better fuel quality than first generation biofuels

However, whether these prospects will come true largely depends on the pace of technological developments and on other constraints, including the availability and price of crude oil and biofuel feedstocks. In addition, further R&D and the implementation of appropriate policy mechanisms are considered essential to the development of second-generation biofuels.

Most stakeholders do not give any views as to when the second generation will become cost-competitive because of the early stage of development or a lack of insight into technological development of second-generation biofuels. Some stakeholders expect the first large-scale commercial plant to be operational before 2010, followed by continued market growth. Some respondents expect the second-generation of biofuels to become cost-competitive with the first generation around 2015.

Question 6.3

It is sometimes suggested that vehicles can travel more kilometres on a given amount of biofuel than on an equal amount (measured by energy content) of conventional fuel. Are any data or explanations available on this point?

The energy efficiency of vehicles in principle does not change significantly when biofuels are used instead of conventional ones and that any change in fuel use cannot be confirmed for modern engines. However, some stakeholders argue that a so-called ‘booster’ effect can be observed for fuels containing oxygenated components (including those of bio-origin such as bio-ETBE and bioethanol). The reason for this is that, although oxygen does not contribute energy in itself, it enables a cleaner and more complete combustion of petrol, leading to improved fuel efficiency and reduced vehicle emissions. For low levels of bioethanol or bio-ETBE these effects seem to be rather small. The effect would be more prominent for higher ethanol concentrations, and higher loads and speeds, since in the latter case fuel consumption would normally be greater. The effect also seems to be higher for flexible-fuel vehicles and dedicated vehicles, and may also occur for biodiesel and PPO. Some stakeholders indicate that further R&D is necessary to get better insight into possible effects on fuel use of biofuels and biofuel blends, and optimise the adaptation of conventional engines to biofuels, possibly resulting in improvements as compared to conventional fuels.

Further references and data on this issue can be found in the contributions of:

- *Elinoil*
- *PPO*
- *UK government*
- *Società Italiana Bioetanolo*

Question 6.4

Problems have been reported in interpreting the directive’s requirements on the calculation of the contribution of certain types of biofuel (notably ethers such as ETBE). Could the drafting of this directive be improved on this point? If so, how?

Some stakeholders agree with the interpretation as given in the Biofuels Directive. Others argue that the biofuel content of a fuel has to be defined based on chemical and physical criteria. This implies that the biofuel content should be based on the Lower Heating Value of the fuel. The

energy value to be taken into account for bio-ETBE should therefore only refer to the fraction of bioethanol it contains.

In addition, some stakeholders suggest that the list of biofuels included in the Directive should be revised and be made fully open to new products, since already now there are several biofuels and bio components near commercial production, which are not mentioned in the Directive.

Finally, both the Danish and the Slovak government raise the issue of caloric value of all fuels, petrol and diesel as well as biofuels. The Danish government states that it uses different values than the Commission. The Slovak Republic merely would like to know if the values they use are the correct ones and calls for methodical coordination for intercommunication within the EU.

Annex 1: Listings of certification criteria from the LowCVP (UK) and the Dutch scheme

LowCVP:

Conservation of Carbon

- Protection of above-ground carbon
- Protection of soil carbon

Conservation of Biodiversity

- Conservation of important ecosystems & species
- Basic good biodiversity practices

Sustainable Water Use

- Efficient water use in water critical areas
- Avoidance of diffuse water pollution

Waste Management

- Waste management complies with relevant legislation
- Safe storage and segregation of waste

Maintenance of soil fertility

- Protection of soil structure and avoidance of erosion
- Maintain nutrient status
- Good fertiliser practice

Good Agricultural Practice

- Use of inputs complies with relevant legislation
- Use of inputs justified by documented problem
- Safe handling of materials

Planning, Records & Improvement

- Environmental plan for production unit
- Records maintained for operations, training and environmental impacts
- Improvement cycle based on planning and records

Dutch draft criteria for a certification scheme (under development):

- The substantial overall reduction of greenhouse gas emissions, compared fossil fuels;
- The availability of food, medicine and construction material and the supply of local energy may not decrease;
- Protected areas or valuable ecosystems may not be deteriorated;
- No negative effects on regional and national economy;
- No negative effects on the well-being of employees and local population, taking into account the labour circumstances of employees, human rights, rights of property and use of land, social circumstances for the local population, and integrity.
- The environment may not suffer from the use of biofuels. This demands for adequate waste management, limits to (agro)chemicals use including artificial fertiliser, avoidance of erosion and maintenance of soil quality, maintain the quantity and quality of surface and water.

Annex 2: Measures concerning sustainability and certification according to WWF

As regards **GHG emissions**, the revised Biofuels directive could implement this prerequisite by:

- Mandating Member States to provide, within a brief (1-2 years) term following adoption of the new directive, a specific section on biofuels in their annual reports on GHG emissions (Please refer to answer Q.3.3.);
- Mandating fuel suppliers to provide, within a brief (1-2 years) term following adoption of the new directive, annual reports on the current well-to-wheel GHG emissions for the biofuels they put on the market under their obligation, and the measures they intend to adopt / strengthen in order to comply with the obligations set on them at EU level;
- Allocating authority to the Commission to assess and challenge Member States and fuel suppliers on the solidity of their proposed strategies, and to penalise them in the eventuality of non-delivery or compliance.

The implications of this approach are:

- Actual delivery of GHG emissions savings are the only environmental obligation associated to biofuels (hopefully this would be extended in a single system applicable to all bioenergy);
- The reduction of GHG emissions globally has been politically mandated through the Kyoto Protocol. This provides a legal spur for transposing such a requirement into implementing legislation. Discriminating biofuels based on GHG emissions savings can lead to no automatic exclusion of particular feedstocks, countries of production or methods of production, issues of particular importance under international trade rules;
- The EU imposes the obligation, and is responsible for ensuring it is delivered. But Member States and fuel suppliers are free to find the most efficient approach to delivering the result;
- GHG emissions savings fully legitimise biofuels (hopefully all bioenergy) as an environment solution;

Different systems of accounting for GHG emissions and savings have been developed, including more recently the framework of the U.K.'s Low Carbon Vehicle Partnership (LowCVP)²⁴ and the Dutch "Import Duurzame Bioenergie".

WWF would recommend that the European Commission adopts a single biofuels GHG accounting system applicable to all operators in the EU, drawing from the European Trading Scheme (ETS) accounting system. This would greatly facilitate comparative accounting and thus collation of real information on trends. Other examples of accounting systems include WRI/WBCSD GHG Protocol, ISO 14064, methodologies developed by the CDM Executive Board.

Thus, for GHG WWF would recommend the use of both mandatory reporting and mandatory delivery, subject to penalties in case of non-compliance or delivery. Awards and incentives should not be provided for this. As the whole fuel sector and all Member States will be broaching this at the same time, distortions of competition will not occur.

For the **wider range of sustainability concerns** outlined, the European Commission need not attempt to either regulate or impose their delivery. Different approaches could be envisaged to ensure these issues are addressed:

1. The European Commission defines in the revised Biofuels directive the key social and environmental categories (e.g. freshwater usage, deforestation) and process criteria (e.g. stakeholder consultation) it deems necessary to determine the sustainability of biofuels

(hopefully all bioenergy) OR it refers to those developed by independent international protocols (e.g. ISEAL Alliance Code of Good Practice for Setting Social and Environmental Standards).

2. The European Commission makes available a qualitative comparative and independent assessment of a broad selection of voluntary environmental and social internationally-applicable assurance schemes (e.g. RSPO, IFOAM, FSC, EUGENE, WWF-World Bank Alliance), and their performance against point 1 above;
3. The European Commission mandates Member States and fuel suppliers to report every 1 to 2 years on their performance against the categories and processes described in point 1 above.
4. The Member States and fuel suppliers are free to use any or none of the schemes reviewed in point 2 above, as these are all voluntary stakeholder (e.g. industry and NGOs) led approaches. The assessment will provide a broader knowledge of how such systems can be developed and operate, and their relative benefits and drawbacks.

This will help:

- Member States and fuel suppliers, by providing them with a starting point (though some may already have systems in place);
 - The European Commission, by providing a better understanding of where better practice lies in the industry, and what can legitimately be expected in terms of performance;
 - NGOs and interested stakeholders, to bring pressure to the industry to improve their performance
5. Based on the information collated (and published) under points 1 and 2 above, the European Commission has the authority to:
 - Penalise Member States and fuel suppliers who fail to report or report inadequately;
 - Ask Member States and fuel suppliers to improve their performance, with a view to complying, with the key categories outlined in point 1 above. Penalise them should they fail to explain or justify non compliance with any of the key categories or processes;
 - Request from Member States and fuel suppliers independent audits, monitoring or evaluations.

It is clear that the Commission faces an enormous challenge in identifying the most effective role for legislation and/or public finances in ensuring environmental assurance. WWF hopes that some of the suggestions above, as well as the discussions at the workshop organised with DG TREN on June 29th 2006, usefully contribute to the Commission's thinking.

WWF is concerned that the Commission will understandably not be in a position to propose a system of environmental assurance by the time it intends to table the review of the Biofuels directive's performance to date in September 2006. Nonetheless, WWF believes that the Commission can:

- Make an un-equivocal commitment in the review on the need for environmental and social assurance for biofuels, addressing the category of issues and processes as outlined in point 1 above;
- State that this system will include mandatory assurance for GHG emissions;
- State that this will apply to Member States and to all fuel operators;
- Commit to developing the mechanisms for the mandatory assurance of GHG emissions, and the reporting obligations for the other range of categories and processes within one year from the adoption of the new Biofuels directive;
- Commit to developing these through best practice in stakeholder consultation.

Annex 3: Overview of respondents

NGOs

-  European Environmental Bureau (EEB)
-  Birmingham Friends of the Earth
-  Danmarks Naturfredningsforening (Danish Society for Nature Conservation)
-  Réseau Action Climat France
-  Pure Plant Oil
-  Institut Français des Huiles Végétales Pures
-  German society for nature conservation (NABU – BirdLife Germany)
-  Scottish Natural Heritage
-  Blooming Futures
-  Technology for Life
-  Inforse
-  European Pure Plant Oil Association
-  NEN Energy Resources
-  Vegburner
-  European Landowners' Organization
-  Fachagentur Nachwachsende Rohstoffe e.V. (FNR)
-  BirdLife International and RSPB
-  Stichting Natuur en Milieu
-  Deutsche Umwelthilfe (DUH)
-  European Tribune
-  Sprecher Rettet den Regenwald e.V. 
-  European Federation for Transport and Environment (T&E)
-  Biofuelwatch
-  European Environmental Citizens' Organisation for Standardisation (ECOS)
-  WWF
-  Ligue pour la Protection des Oiseaux – France Nature Environnement

Institutions / Member States

-  Netherlands Environmental Assessment Agency
-  Energistyrelsen
-  Landwirtschaftskammer Österreichs
-  Deutsche Energie-Agentur
-  Lille Métropole Urban Community
-  Brazilian Government
-  Umweltbundesamt
-  Natural England
-  UK Government
-  Dutch Government

-  Latvian Ministry of Economics
-  Ministry of Economy of the Slovak Republic
-  House of Lords' European Union Select Committee - Environment and Agriculture Sub-Committee
-  German Government
-  Ireland
-  Gouvernement français
- Industry / Private Sector
-  Forest Products Biotechnology group at the University of British Columbia
-  Novozymes A/S
-  Department of Economics Göteborg University
-  Europia
-  Institut Français du Pétrole (IFP)
-  German Chemical Industry Association (VCI)
-  Finnish oil company Neste oil Oyj
-  European Natural Gas Vehicle Association (ENGVA)
-  Združenie výrobcov liehu a liehovín na Slovensku
-  Finnish Oil and Gas Federation
-  British Sugar
-  Bundesverband Güterkraftverkehr Logistik und Entsorgung (BGL)
-  Danish Transport and Logistics Association (DTL)
-  Ecomotion GmbH
-  Valenergol
-  Hydro
-  eBio
-  Cofalec (The Association of the European Yeast Manufacturers)
-  Fediol
-  Apag
-  Renault
-  UEPA
-  AssoDistil
-  Aspec
-  North East Biofuels
-  Whyte and Mackay
-  Port of Rotterdam
-  Finnish Food and Drink Industries' Federation - Ethanol Producers' Association
-  AGPB - AGPM
-  AGPB - AGPM in France
-  Ford Motor Company
-  Università degli Studi della Tuscia
-  EFOA
-  ADECA

-  ATC
-  Sundance
-  Coceral
-  Bio-power
-  BioAlcohol Fuel Foundation (BAFF)
-  D1 Oils
-  Verband der Automobilindustrie e.V. (VDA)  
-  Renewable Energy Association of the United Kingdom
-  CEEP
-  APPA
-  UNGDA
-  COPA-COGECA
-  SNPAA
-  Unilever
-  Elinoil - Hellenic Petroleum Company SA / Elin Biofuels SA
-  Tereos
-  National Farmers' Union of England and Wales
-  Union for promoting oil and protein plants (UFOP)
-  Pôle de compétitivité « Industries & Agroressources »
-  Daka
-  Waterman Sustainable Energy
-  Iogen
-  CEPM (Confédération Européenne des Producteurs de Maïs)
-  European Biodiesel Board (EBB)
-  Caobisco
-  Lyondell Chemical Company
-  The Society of Motor Manufacturers and Traders Limited
-  Anpromis
-  Ethanol Union
-  Toyota Motor Europe
-  Lantmännen Agroetanol AB
-  European Car Manufacturing Association (ACEA)
-  Sener Grupo de Ingeniería
-  Altran
-  Regenattec
-  CER
-  Repsol YPF
-  The Environmental Industries Commission
-  Confederation of the food and drink industry of the EU (CIAA)
-  International Margarine Association of the Countries of Europe (IMACE)
-  Associations des Amidonniers et Féculiers (AAF)

-  EARPA - European Automotive Research Partners Association
-  BEST-project (Bioethanol for Sustainable Transport)
-  Rheinisch-Westfälisches Institut für Wirtschaftsforschung (RWI)
-  LowCVP
-  Fédération Internationale de l'Automobile (FIA)
-  AEBIOM
-  Società Italiana Bioetanolo
-  CAOBISCO
- Private Citizens
-  Mr Fleming - UK
-  Mr Irving - UK
-  Mr Noble - UK
-  Mr Parra
-  Ms Palmer
-  Mr Müller - DE
-  Mr Ernsting - UK
-  Mr Dernbach - DE
-  Mr Maybon - FR
-  Mr Pogson - UK
-  Mr Johnson - UK
-  Mrs Green - UK
-  Mr Lander - UK
-  Mrs Justyna Zielińska & Mr Zbigniew Ott - PL
-  Mr James Levy - UK
-  Mrs Ann Segerborg-Fick - SE
-  Mr Wolfgang Becker - DE
-  Mrs Regine Barth - DE
-  Ms Smith - UK