The Future of Sustainability

Re-thinking Environment and Development in the Twenty-first Century

Photo Credit: NASA Johnson Space Centre (NASA-JSC)

Report of the IUCN Renowned Thinkers Meeting, 29-31 January 2006

www.iucn.org

The Future of Sustainability:
Re-thinking Environment and Development in the Twenty-first Century

W.M. Adams
Professor of Conservation and Development,
Department of Geography, University of Cambridge, UK

1. Background

IUCN convened a meeting at the end of January 2006, to discuss the issue of sustainability in the twenty-first century[1]. The meeting considered the progress made towards global sustainability, the opportunities and the constraints facing the world and the World Conservation Union in attempting to meet the challenge of sustainability. This paper has been written to develop further key arguments explored at the meeting, and to provide a basis for discussion by IUCN Council of next steps in the 'rethinking sustainability' process[2].

2. The Idea of Sustainable Development

At the start of the twenty-first century, the problem of global sustainability is widely recognised by world leaders, and a common topic of discussion by journalists, scientists, teachers, students and citizens in many parts of the world. The World Summit on Sustainable Development (WSSD, 2002) confirmed that the first decade of the new century, at least, would be one of reflection about the demands placed by humankind on the biosphere.

The idea of sustainability dates back more than 30 years, to the new mandate adopted by IUCN in 1969[3]. It was a key theme of the United Nations Conference on the Human Environment in Stockholm in 1972[4]. The concept was coined explicitly to suggest that it was possible to achieve economic growth and industrialization without environmental damage. In the ensuing decades, mainstream sustainable development thinking was progressively developed through the World Conservation Strategy (1980)[5], the Brundtland Report (1987)[6], and the United Nations Conference on Environment and Development in Rio (1992), as well as in national government planning and wider engagement from business leaders and non-governmental organisations of all kinds.

Over these decades, the definition of sustainable development evolved. The Brundtland Report defined sustainable as 'development that meets the needs of the present without compromising the ability of future generations to meet

their own needs'[6]. This definition was vague[7], but it cleverly captured two fundamental issues, the problem of the environmental degradation that so commonly accompanies economic growth, and yet the need for such growth to alleviate poverty.

The core of mainstream sustainability thinking has become the idea of three dimensions, environmental, social and economic sustainability. These have been drawn in a variety of ways, as 'pillars', as concentric circles, or as interlocking circles (Figure 1). The IUCN Programme 2005-8, adopted in 2005, used the interlocking circles model to demonstrate that the three objectives need to be better integrated, with action to redress the balance between dimensions of sustainability (Figure 1 c).
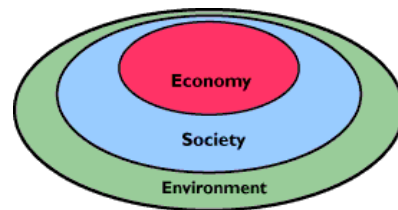
Figure 1. Three Visual Representations of Sustainable Development: Pillars, Circles, Interlocking Circles

B. Concentric ircles

http://www.sustainablecampus.cornell.edu/sustainability-intro.htm
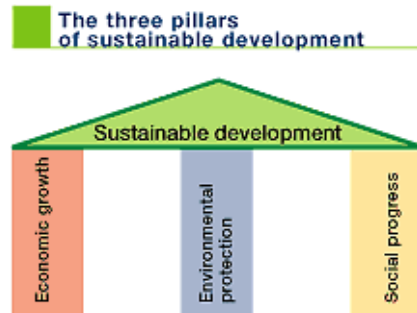
A. Pillars

http://www.vda.de/en/service/jahresbericht/auto2002/auto+umwelt/u_3.html

C. Overlapping Circles

The three pillars of sustainable development, from left to right, the theory, the reality and the change needed to better balance the model

http://www.iucn.org/programme/

Governments, communities and businesses have all responded to the challenge of sustainability to some extent.

Almost every national government in the United Nations now has a minister and a department tasked with policy on the environment, and many regional and local governments have also developed this capacity. Since 1992 the volume and quality of environmental legislation (international, national and local) has expanded hugely, and international agreements (such as the Kyoto protocol) have not only raised the profile of environmental change but also begun to drive global policy change.

Public awareness of environmental and social issues in development are in many cases now well developed. Citizens in almost all countries not only

know the issues, but tend to feel that the quality of the environment is important both to their own wellbeing and to the common good.

The 'greening' of business has grown to be a central issue in corporate social responsibility for many global companies, although for many it is still a boutique concern within wider relationship management, rather than something that drives structural change in the nature or scale of core business.

There is a profound paradox here.   On the one hand, the twenty-first century is widely heralded as the era of sustainability, with a rainbow alliance of government, civil society and business devising novel strategies for increasing human welfare within planetary limits. On the other hand, the evidence is that the global human enterprise rapidly becoming *less* sustainable and not more. Much has been achieved - but is it enough? Are global trends towards sustainability or away from it? Have the concepts of sustainability and sustainable development offered a coherent basis for change?

2. Critiques of Sustainable Development

2.1 Is it clear what sustainable developments means?

The phrase sustainable development covers a complex range of ideas and meanings[8]. *Our Common Future* located environmental issues within an economic and political frame, moving sustainability to the core of international development debate. Rio emphasised global environmental change, and the problems of biodiversity and resource depletion and climate change. The World Summit on Sustainable Development returned poverty to the top of the agenda, reflecting the Millennium Development Goals agreed at the United Nations Millennium Summit in September 2000[9]. Sustainability was one of eight Goals, associated with 18 targets and 48 indicators intended to be yardsticks for measuring improvements in people's lives[10].

Analysts agree that one reason for the widespread acceptance of the idea of sustainable development is precisely this looseness.   It can be used to cover very divergent ideas[11]. Environmentalists, governments, economic and political planners and business people use 'sustainability' or 'sustainable development' to express sometimes very diverse visions of how economy and environment should be managed. The Brundtland definition was neat but inexact. The concept is holistic, attractive, elastic but imprecise. The idea of sustainable development may bring people together but it does not necessarily help them to agree goals. In implying everything sustainable development arguably ends up meaning nothing.

2.2 The problem of trade-offs

The conventional understanding of sustainable development, based on the 'three pillars' model is flawed because it implies that trade-offs can always be made between environmental, social and economic dimensions of

sustainability. In response to this, a distinction is often drawn between 'strong' sustainability (where such trade-offs are not allowed or are restricted) and 'weak' sustainability (where they are permissible). The concept of 'critical natural capital' is also used to describe elements of the biosphere that cannot be traded off (e.g. critical ecosystems or species). However, in practice, development decisions by governments, businesses and other actors do allow trade-offs and put greatest emphasis on the economy above other dimensions of sustainability. This is a major reason why the environment continues to be degraded and development does not achieve desirable equity goals.

The three 'pillars' cannot be treated as if equivalent. First, the economy is an institution that emerges from society: these are in many ways the same, the one a mechanism or set of rules created by society to mediate the exchange of economic goods or value. The environment is different, since it is not created by society. Thinking about trade-offs rarely acknowledges this. Second, the environment underpins both society and economy. The resources available on earth and the solar system effectively present a finite limit on human activity. Effective limits are often much more specific and framing, in that the capacity of the biosphere to absorb pollutants, provide resources and services is clearly limited in space and time. In many areas (e.g. warm shallow coastal waters adjacent to industrialised regions) that capacity is close to its limits.

2.3 The Problem of Metrics

There is no agreed way of defining the extent to which sustainability is being achieved in any policy programme. Sustainability and sustainable development are effectively ethical concepts, expressing desirable outcomes from economic and social decisions. The term 'sustainable' is therefore applied loosely to policies to express this aspiration, or to imply that the policy choice is 'greener than it might otherwise be (e.g. the idea of a 'sustainable road building programme'). Everywhere the rhetoric of sustainable development is ignored in practical decisions. Often sustainable development ends up being development as usual, with a brief embarrassed genuflection towards the desirability of sustainability. The important matter of principle therefore becomes a victim of the desire to set targets and measure progress.

3. Is There a Problem with the State of the World?

The issue of environmental limits to the human project on earth was brought to international attention in the early 1970s, particularly by the Club of Rome's precocious computer modelling in *Limits to Growth*[12]. The World Conservation Strategy, published in 1980, offered the first coherent a analysis of environmental sustainability. It emphasised the need to maintain essential ecological processes and life support systems, to preserve genetic diversity, and to ensure the sustainable utilization of species and ecosystems.

In 2005, exactly a quarter of a century later, the findings of the Millennium Ecosystem Assessment offered a stark commentary on the state of the earth and the sustainability of humankind's management (See Box)

The significance and scale of the global human footprint is not in doubt. Consumption of living resources as raw material and sinks for waste materials is high and growing[13]. In 1997, Peter Vitousek and colleagues noted in *Science* that the rate and scale of change in the biosphere as well as the kinds and combinations of change were fundamentally different from those at any other time in planetary history[14]. The results of these transformations are almost universally negative in their impacts on the biosphere. In 1992, Edward Wilson noted that human activities have increased 'background' extinction rates by between 100 and 10,000 times. 'We are', he said, 'in the midst of one of the great extinction spasms of geological history'.[15]

The message is no better on poverty. The Millennium Assessment makes quite clear that not only does the level of poverty remain high, but inequality is growing (Box 2).

Box 1: State of the Biosphere

Status of Regulating and Cultural Services

Regulating Services	Status
Air quality regulation	decline
Climate regulation – global	improvement
Climate regulation – regional and local	mixed
Water regulation	mixed
Erosion regulation	decline
Water purification and waste treatment	decline
Disease regulation	mixed
Pest regulation	decline
Pollination	decline
Natural hazard regulation	decline
Cultural Services	
Spiritual and religious values	decline
Aesthetic values	decline
Recreation and ecotourism	mixed

Source: Millennium Ecosystem Assessment and sources in numbered end notes

State of the world's ecosystems
- By 1980, humans estimated to appropriate forty per cent of potential terrestrial net primary production[16].
- In 1994, 75 per cent of the habitable earth estimated to have been disturbed by human activity[17].
- In 2003 the global population of large predatory fish had been reduced to only 10% of levels before industrial fishing began[18].

Change in ecosystems:
- More land was converted to cropland in the 30 years after 1950 than in the 150 years 1700 - 1850
- 20% of the world's coral reefs were lost and 20% degraded in the last several decades
- Amount of water in reservoirs quadrupled since 1960
- Withdrawals from rivers and lakes doubled since 1960[19]

Change in biogeochemical cycles:
- Flows of biologically available nitrogen in terrestrial ecosystems doubled since 1960
- Flows of phosphorus tripled
- 50% of all the synthetic nitrogen fertilizer ever used has been used since 1985
- 60% of the increase in the atmospheric concentration of CO_2 since 1750 has taken place since 1959[20]

Box 2 Poverty

- 1.1 billion people survive on less than $1 per day. 70 percent live in rural areas where they are highly dependent on ecosystem services
- Inequality has increased over the past decade. During the 1990s, 21 countries experienced declines in their rankings in the Human Development Index
- Over 85o million people were undernourished in 2000–02, up 37 million from the period 1997–99
- Per capita food production has declined in sub-Saharan Africa
- Some 1.1 billion people still lack access to improved water supply, and more than 2.6 billion lack access to improved sanitation
- **Water scarcity affects roughly 1–2 billion people worldwide.**
- Global improvements in levels of poverty are skewed by rapid economic growth in India and China; poverty elsewhere (especially in sub-Saharan Africa) is profound and persistent

Source: Millennium Ecosystem Assessment

Problems of environment and development are closely linked; degradation of ecosystem services harms poor people. Half the urban population in Africa, Asia, Latin America, and the Caribbean suffers from one or more diseases associated with inadequate water and sanitation. The declining state of capture fisheries is reducing an inexpensive source of protein in developing countries. Per capita fish consumption in developing countries, excluding China, declined between 1985 and 1997. Desertification affects the livelihoods of millions of people, including a large portion of the poor in drylands

Since the Millennium Summit in 2000 (at which world leaders agreed the Millennium Development Goals), and the World Summit on Sustainable Development in 2002, there has been a renewed energy to policy debate about poverty and environment. The concept of sustainable development precisely embraces this challenge.

Yet despite over three decades of explicit concern about sustainability, a concern increasingly part of the mainstream of international debate, the human claim on nature is increasing almost everywhere unchecked, and the problem of poverty is deeply persistent. The implications for the poor of the current generation and for future generations is extremely serious.

The velocity of environmental change is fast, and increasing. As Peter Vitousek and colleagues comment, tellingly, 'we are changing the earth more rapidly than we are understanding it'[21]. Rates of human transformation of the earth are increasing, particularly in countries undergoing rapid industrialization or de-industrialisation.
The human capacity to destroy life-support systems (ecosystem services) is new. Humanity is burning through natural assets and their capacity to support life and quality of human life without thought to the future and the rights and needs of today's people.

The current relationship between humans and biosphere is novel, outside all human historical experience (and therefore learned adaptive responses), and arguably outside the envelope of evolution adaptation of higher mammals.

4. Urgency, Risk and Opportunity

Although the issue of sustainability has been recognised explicitly since the 1970s, there is an acute urgency to the global problematique at the start of the twenty first century. However, at the same time the first decade of this century offers a unique opportunity to re-think the dominant patterns of global development.

The twentieth century was dominated by debates about 'development', how to promote Western models of economic growth, urbanisation and industrialisation globally. Environmentalist critique of development in the last 30 years argued that the conventional development model was unsustainable.

Several factors now offer a unique window for demonstrating that fact, and for convening a new discussion about human and environmental futures.

Today, at the start of the twenty first century, some developing countries had begun to achieve sustained economic growth and industrialisation on this model, first the 'Asian Tigers', then China and India. The success of development on the standard 'fossil fuel automobile-based throwaway consumer economy' in China and India offers a unique opportunity to assess its limitations. China's success, for example, is bringing massive increases in consumption (grain, meat, steel oil, timber)[22]. China's revolutionary economic growth demonstrates the flaws with the conventional growth model. It shows the need for systemic change in the way development is understood and brought about globally: in the west as much as elsewhere. The earth is at a tipping point: business as usual is no longer an option.

The present global dilemma offers huge risks, but also outstanding opportunities. The need to create a 'sustainable postfossil-fuel society and economy'[23] has never been more widely recognised, although the challenges on the road to achieving it remain breathtaking.

The dominant development model based on the unlimited meeting of consumer wants leads inexorably to over-consumption. Yet continued physical expansion in the global reach of commodity supply systems means that consumers in developed countries continue to perceive resource flows as bountiful, and develop no sense of limits to consumption[24]. Whether as consumers or citizens, people in industrialised economies show no awareness that production systems are ecologically flawed or constrained. Yet this model is itself disseminated internationally by global media and advertising as unproblematic, uniformly good and desirable. Belief in the opportunity to consume without limits in an ecologically limited world is a powerful driving force increasing global risk.

Interestingly, the unsustainability of the present global development model is probably better understood in China than in the conventional industrial heartlands of Europe and North America. There, politicians fear backlash from citizens reacting as consumers to anything that alters their lifestyle in ways they perceive as deleterious. This results in demands for low fuel prices, profligate material and energy consumption, and persistent ignorance of the social and environmental conditions under which global products are created. Environmentalist challenges to business as usual remain outside the mainstream, and the unsustainable patterns of production and consumption of the developed world persist.

The global integration of once semi-independent national economies is advancing rapidly, eroding the capacity of the nation state to balance economic, social and environmental choices

Social and cultural globalization is also rapid, creating both dizzying opportunities for information and cultural exchange, but also unprecedented challenges to the post-second world war institutions of international

integration and governance. Disabling fears about security, cultural change and political threat are an issue in many countries.

Human influences on natural patterns of climatic variability undermine the comfortable assumption dominating the twentieth century that global climate would persist within known historical bounds. Scientific understanding, although growing, is still limited. However, it is clear that the ocean-atmosphere envelope demonstrates non-linear dynamics, making relatively rapid changes in climatic patterns a likely feature of the future earth; human forcing of the parameters of that change (through the greenhouse effect and other processes) will increase the speed and unpredictability of such changes. Climate change has immediate implications for other phenomena such as sea level and extreme events. The coastal location of the world's largest cities exposes huge numbers of people to potential future risk.

The growth of global human populations brings exciting benefits in terms of cultural achievements and creativity, and the generation of new ideas. However, the rate of growth of human populations and the rate of growth of the services needed to meet growing human need present huge challenges. The chronic nature of the poverty into which many children are born presents significant and rapidly advancing risks.

Technology also offers opportunities and risks. The novelty of some new technologies and the speed of technological innovation and adoption brings the potential for unforeseen social, environmental, economic or health consequences, (e.g. the adoption of new technologies or novel compounds by untrained users). Some technologies bring significant political and governance challenges (e.g. nuclear fission).

Developments in ecological restoration offer novel and inspiriting opportunities to enhance and reinstate biodiversity and ecosystem services, yet human skills in ecosystem assembly remain limited. For this reason, any argument for a strategy of 'develop now and restore damaged ecosystems later', based on extrapolation of the logic of the 'environmental Kuznets curve' is fundamentally flawed. 'Critical natural capital' cannot be replaced within realistic timeframes.

The concurrence of disasters in 2005 and 2006 (numerous hurricanes and tropical storms, earthquakes, flooding, famine) has concentrated the minds of Western media pundits on the shared fate of humanity. Some of these disasters (especially storminess and flooding) are connected in popular accounts to issues such as climate change. The parallel nature of environmental and humanitarian issues is thus clear to many people.

There is therefore, in the first decades of the twenty-first century, a powerful opportunity to start a new debate about development, economy, equity and environment. This must address both the human needs and aspirations of the poor of developing world, and the over-consumption in the industrialised world.

5. A New Challenge

5.1 The Need for a New Approach

Despite the achievements of the last three decades, the present concepts of sustainability and sustainable development are clearly inadequate to drive the transitions necessary to adapt human relations with the rest of the biosphere for the future. Something new is needed.

The problem with sustainability and sustainable development is not that the aspirational values they represent are wrong, but that they are over-worked and tired, As currently formulated they are too loose to drive effective change on the scale required.

The need at the start of the twenty first century is clearly for systemic change. The experience of the last 30 years shows that this cannot be brought about using the metaphors, slogans and ideas that are currently available. The scale of transformation needed demands new concepts, new ideas, new ways of engaging citizens and opinion leaders in the search for solutions.

However, as an idea sustainability has been, and continues to be, powerful. While the concept is clearly burdened with a great deal of excess weight, and many potentially conflicting ideas have become attached to it like barnacles on a ship's hull, it still has considerable power. The concept of sustainability is widely recognised and discussed. It has taken a decade and a half's effort to build the concept into the thinking of local and national governments, business and schools and universities. To use a business analogy, sustainability is an established 'brand' that has wide recognition and still expresses core values to a wide audience. For a business with an established brand that has become tired, abandonment and re-launch of a replacement could bring just huge costs and confusion and lost public engagement.

Hypothesis 1:   That the most effective strategy is to adopt an incremental or evolutionary approach, re-orientating the concept of sustainability, re-emphasising what it means and moving forwards; a strategy of 'keep it but fix it'.

5.2 Timing

The manifold challenges to the world community first decade of the twenty-first century present a turbulent moment within which to push for a new engagement with the idea of sustainability. However, it also offers a window of opportunity for the development of a new approach to planetary management.

By 2020 responses to issues like climate change and 'peak oil' will be more obvious, but the room for manoeuvre will be much less. Moreover, the

political stresses that result for these challenges will not necessarily be conducive to calm collaborative action. Change, particularly significant change, in 'business as usual, needs time, but the environment is the timekeeper. Human misuse of environmental assets is driving environmental change, and this demands action now.

Hypothesis 2: That the timing is right to develop a new strategic approach to global sustainability

5.3 The Role of The World Conservation Union -IUCN
IUCN has a unique constitution (incorporating government and non-governmental organisations) and unique convening power. IUCN therefore is therefore in a position to start to broker new forms of coalition, alliances and see if we can create innovation. If IUCN's membership can be mobilised, then it could provide the basis for a catalytic effect on current debate. IUCN can do little alone, but it can empower and mobilise others.

Hypothesis 3: That IUCN should take a lead in developing new thinking about sustainability

6. New Concepts, New Thinking

6.1 Sustainability and Resilience

The uncomfortable bottom line of sustainability is the insight that the biosphere is limited. In its crude form, the idea of 'limits to growth' dominated 1970s environmentalism. Evidence of resource substitution (fibre optics for copper cables, light plastics for steel) and improved resource use technologies (e.g. improved technologies for the discovery and exploitation of oil reserves) have allowed this view to be pilloried as unrealistic 'flat-earthism'. On the other hand, the spread of persistent organic pollutants, the ozone hole and the growing certainly of anthropogenic climate change caused by CO_2 and other greenhouse gases demonstrate that the fundamental point is perfectly valid. The earth's capacity to yield products for human consumption, to absorb or sequestrate human wastes (especially novel compounds), and to yield ecosystem services are all of them limited. The idea that that there is always somewhere to absorb externalities is flawed, and it is a myth of progress that living systems will always recover from human demands.

Moreover, as environmental capacity is reached, institutions for sharing the earth are placed under intolerable strain.

The science of resilience is central to an understanding of the planetary future, and the metaphor of resilience (and its limits) is valuable for its contribution to more general debate. For decades, message taken from the science of ecology by society more generally was that ecosystems were homeostatic – that once a stress was removed, they would bounce back to their former state. This comforting metaphor implied that there was no reason

to fear that human misuse of the global environment would lead to irretrievable breakdown. The bleak message of the Gaia hypothesis, that the biosphere could be understood as a self-regulating system, was reinterpreted with shocking anthropocentric complacency to imply that it would therefore always support human life. The earth may function to maintain life, but not necessarily life in the stunning biodiversity we know today, and certainly not human life.

Ecology has moved on. Non-linear dynamics are accepted as an inherent element in ecosystem function. Polluted lakes do not necessarily return to their former state when pollution stops; climate can not be expected to vary around some mean approximating to the conditions of the last 30 years; it is highly likely that extinction of certain species will change the amplitude and frequency of ecosystem change in ways that constrain human opportunities; novel compounds and broad-taxon genetic manipulation may well generate shifts in ecosystem form and function.

The biosphere is not infinite. As Edward Wilson observes, 'the biosphere, all organisms combined, makes up only one part in ten billion of the earth's mass. It is sparsely distributed through a kilometre-thick layer of soil, water and air stretched over a half billion square kilometres of the surface'[25].

The capacity of nature to meet human needs depends on both its internal dynamics and its dynamic responses to human stresses. The resilience of the biosphere is critical to the sustainability of human enterprise on earth.

6.2. Sustainability and Human wellbeing

The diversity of life is fundamental to human wellbeing[26]. The concept of nature has great strength, because it combines both a conventional conservation concern for species and ecosystems (biodiversity) and the diverse ways in which species and ecosystems have value (aesthetic, cultural and spiritual values as well as more directly material values, and the Millennium Ecological Assessment recognised).

Under the conventional development model, the 'good life' is defined in narrow economistic terms, in terms of access to good and services. This formulation is inadequate. Just as Amartya Sen's concept of 'development as freedom' (the expansion of the real freedoms that people enjoy) transforms understanding of attempts to achieve development, so too there is a need to concentrate not on the means to achieve sustainability, but on ends[27].

Sustainability needs to be made the basis of a new understanding of human aspiration and achievement. The relevant metric of sustainability is 'the production of human wellbeing (not necessarily material goods) per unit of extraction from or imposition upon nature'[28].

A key element here is the linkage between human wellbeing and security. The quality, diversity and functions of the environment underpin human health, solidarity and security. This is not currently central to thinking about

social and economic development choices, which separate political and economic risk into the mainstream of debate, and sidelines environmental quality and risk wither to the arena of scientific disagreement or some secondary concern about 'quality of life'. Material consumption and political security are therefore treated as if they were separate from, more important than, issues of quality of life.

In fact, security between people depends fundamentally on issues of equity, within and between generations. David Orr suggests the principle that 'no human being has the right to diminish the life and well-being of another and no generation has the right to inflict harm on generations to come'[29]. Security and wellbeing are both rooted in issues of justice at global scale. Sustainability is the path that allows humanity as a whole to maintain and extend quality of life through diversity of life.

The importance of future generations are a central core concept of sustainability. Intra-generational equity (meeting human needs now) needs to be directly linked to the fulfilment of basic needs of all global citizens in the future (inter-generational equity). At present we lack political mechanisms to achieve the former, and we allow development only loosely tied to this goal to undermine capacity to achieve the latter

Justice is of fundamental importance to the planetary future: equity in the enjoyment of the benefits from the use of the earth's resources between and within generations.

6.3 A New Economy

The market is a human institution of unique power and efficiency. It is capable of driving massive changes in environment and human opportunity on a scale and at a speed that dwarfs the regulatory powers of citizen, state or global organisation. Human aspirations, and subsistence, are inextricably linked to the performance of that economy. The twentieth century was the first where the state of the environment became an issue for legislators. Environmentalists have long argued for tighter regulation of markets, but have only recently shown much sophistication in imaging how to engage the power of markets to secure environmental services and biological diversity. This will be vital if we are to map a transition pathway to low-carbon economy that works for both industrialised and non-industrialised economies, for rich and poor countries and for rich and poor within those countries.

We need to devise metrics to make the economy 'tell the economic truth', especially about the externalities of industrial, economic and social processes. This needs new metrics, arising from a new consensus about aims and means and new debates about human goals.

The market is central to the way the world works, but sustainability needs to be understood as a fundamental cultural idea: we need to plant a culture of sustainability. The planetary future depends on what kind of culture of consumerism we build. We need to redesign and engineer the global

economy so that people can get more yet consume less. One aspect of this is an economy of services rather than objects, that generates value without generating waste or unnecessary physical or energetic throughput.

To deal with inequity between rich and poor within a finite world, we need to devise processes that allow gear-down in industrialised economies (in terms of energy and material throughput) as well as necessary gear-up in less industrialised economies.

6.4 Presenting New Thinking:

The existing language of sustainability has become a prison for the imagination. It limits the capacity of partners to respond to the challenge of planetary future (e.g. language of choices, trade-offs). The elements needed for the future are easily stated, although very challenging to work through. They include imagination, vision, passion and emotion.

The issue of emotion is probably central to success. Existing approaches to sustainability have depended heavily on natural science (from which the concept came), and economics. 'Dismal science' in all forms remains essential to charting a course to the future, but it is not enough to drive changes needed. The world is not run by technocrats (even economists), but politicians and the citizens they represent or govern. In the past sustainability has engaged the mind, but the future demands an engagement with the hearts as well.

7. Managing Change

7.1 Beyond the usual

The solution to unsustainable planetary management demands a move beyond both 'business as usual' and 'politics as usual'. There is nothing usual about the situation humankind is in: nobody has ever been here before.

The search for sustainability can be understood as a social trajectory, a choice of paths. This choice has to be offered in terms of a framework of choices. The challenge is to rationalise and reconcile the contradictory achievements of human progress, and provide choices that allow people to separate ends (happiness, freedom, fulfilment, a diversity of options) and means (jobs, income, wealth, possessions, consumption, power).

The language of 'environmental limits' is in many ways a political non-starter. However, it is also central to the challenge of sustainability. Failure to understand and live within limits is the main reason why current patterns of development are not sustainable.

A core challenge therefore is how to 'sell' structural change against the immediate short-term interests of non-destitute citizens, businesses locked into current markets, financial institutions that believe they have no role

beyond maintaining shareholder value, and timid politicians. The policy conservatism and self-interest of wealthy consumers and citizens, the deadening effects of 'affluenza', and of narrow self-interest of the solvent, are key constraints on novel structural change. The parish pump political rhetoric that 'we will not negotiate our way of life' is an understandable position for wealthy countries to take, but it is a deeply negative in its implications. Those with a vested interest oppose change more strongly than those with a vision for change.

The solution to the dilemma of creating change which the rich and powerful mistrust has to be in terms of presenting opportunities and not threats. Consumption has to be made be a driver of positive change, not a driver of global degradation. The language of future possibilities is likely to be more effective than the language of risk. Environmentalism's traditional capacity to speak like the prophet Jeremiah, promising hell to come, does not promote creative thinking and openness to change. The path-dependence of environmentalist rhetoric in the twentieth century has become disfunctional.

Technology is critical to the transition from the 'old economy (fossil fuel, automobile throw-away) to the new economy (reuse, recycle, new energy)[30]. New technologies may be the key to substantial improvements in material and energy intensity. They may also pose risks to health, welfare and environment. New institutions may be needed to manage transitions to new technologies.

We are on the cusp of non-media mass communication (citizen-to-citizen learning, using the web). This has implications for the way information is stored and exchanged (search engines versus libraries), how information becomes knowledge and how opinion gains authority. These offer both opportunities and risks to the formulation and dissemination of new paradigms for imaging the planetary future.

7.2 Alliances for change

To have credibility and success, environmentalists need to move beyond the comfort zone of their established professional rituals and partnerships. The changes needed cannot be brought about by environmentalists alone, let alone by IUCN. It will require numerous alliances with a diverse range of actors, big and small, including businesses, governments, development and environmental-developmental organisations and other civil society organisations such as religious groups. Capacity building will be critical to the ability of some partners to support and bring about change.

Businesses are an important part of the solution. A key dimension of an approach offering choices must be the effective combination of enterprise, market and regulation. The market is hugely powerful as a force, for good or bad. It is highly efficient, but needs regulation if it is to 'tell the ecological truth'. Taxation (with taxes restructured to reflect indirect costs of resource use, for example carbon throughput) is necessary if creative structural change is to be brought about. Relevant businesses are not necessarily large

Conservation and environmentalism in the past have placed excessive emphasis on government and regulation: but why try to drive or coerce change by regulation if you can use the market to change behaviour? As the Grameen businesses demonstrate, social enterprise can be a powerful; force for positive change, far outstripping the capacity of government because of its capacity to harness individual human enterprise and self-interest. Such viral, bottom-of-pyramid solutions to sustainability challenges are in their infancy.

Businesses cannot bring about the needed changes alone. They need governments to regulate, and financiers to reward moves towards sustainability. Ultimately, citizens need to provide the driving forces for new economies through their decisions as consumers. Their ability to balance long term human interests as citizens, parents and neighbours in making short-term consumer choices will have a significant impact on the feasibility of a transition to a new sustainable global economy.

It is unlikely that an attempt to draw up a holistic 'plan for the future' will be effective. The economic, cultural and political changes needed are too complex to map out in detail. A more effective strategy would be based on evolving braided channels of change that different actors can own and drive forwards.

Different strategies will be needed in different contexts: no holistic 'one size fits all' plan will be effective. Los Angeles and Liberia are different places, with different challenges.

7.3 Vision and Expectations

The challenges ahead demand vision and boldness. Popular support for the complex and difficult transitions ahead demand popular support. This will only be realised if ideas connect with heart and emotion. The choices ahead are essentially political, and engagement in debate must centre on central questions of ethics.

At the same time, proposal must be realistic. Win-win solutions are rare. We need to understand how to make trade-offs between goals (between the interests of different people, between different environmental outcomes) better.

The next six decades are crucial. Sixty years is three human generations. Young people can imagine their grandchildren. What world will today's teenagers see their children and grandchildren try to live in?

NOTES

[1] 'The Future of Environmentalism: Re-thinking sustainability for the twenty-first century' 29-31 January, Hotel Uto Kulm in Zurich, attended by 20 people, including the President and Director General. It was facilitated by Angela Cropper, and attended by William M. Adams, Rubens Harry Born, Lester R. Brown, Sylvia Earle, ,Javed Jabbar, Bill Jackson, Sally Jeanrenaud, David Kaimowitz, Ashok Khosla, Lu Zhi, Gabriel Lopez, Christine Milne, Mark Moody-Stuart, Valli Moosa, Manfred Niekisch, Carlos Manuel Rodriguez, Achim Steiner, Alexei Yablokov, Muhammad Yunus. This meeting was part of a process begun by a decision of the 63rd Meeting of the World Conservation Union Council (14-16 February 2005), which called upon the Director General to 'develop a statement of Council which would capture the conceptualization of conservation as it stands today'. This statement was intended 'to reflect the key conclusions from the 3rd IUCN World Conservation Congress, which sought to link the human and environmental agendas more effectively, and set out the direction for the future evolution of conservation. In addition, the value of ecosystems should be explored as a key concept. It could serve as a clarion call to the Union's members and Commissions, to the environmental movement as a whole and society at large'.

[2] This paper has been drafted by W.M. Adams, University of Cambridge, Downing Place, Cambridge CB2 3EN, email: wa12@cam.ac.uk. It draws directly on the insights and suggestions of all those at the Uto Kulm meeting, but does not necessarily reflect their views.

[3] The new IUCN mandate in 1969 spoke of 'the perpetuation and enhancement of the living world – man's natural environment – and the natural resources on which all living things depend', which referred to management of 'air, water, soils, minerals and living species including man, so as to achieve the highest sustainable quality of life'

[4] McCormick, J.S. (*The Global Environmental Movement: reclaiming Paradise*, (London: Belhaven, 1992).

[5] IUCN, *The World Conservation Strategy*, (Geneva: International Union for Conservation of Nature and Natural Resources, United Nations Environment Programme, World Wildlife Fund, 1980). WWF is now the Worldwide Fund for Nature, IUCN now the World Conservation Union - IUCN.

[6] B Brundtland, H. *Our Common Future*, (Oxford: Oxford University Press, for the World Commission on Environment and Development, 1987), (p. 43).

[7] S.M. Lélé, "Sustainable development: a critical review," *World Development* 19 (1991): 607-621.

[8] S.M. Lélé, (1991) 'Sustainable development: a critical review', *World Development* 19: 607-621.

[9] A.L. Mabogunje, (2002) 'Poverty and environmental degradation: challenges within the global economy', *Environment* 44 (1): 10-18.

[10] www.developmentgoals.org/

[11] W.M. Adams, *Green Development: environment and sustainability in the Third World* (London: Routledge, 2001).

[12] Meadows, D., Randers, J. and Behrens, W.W. (1972) *The Limits to Growth*., Universe Books, New York.

[13] Wackernagel, M. and Rees, W. (1996) *Our Ecological Footprint: Reducing Human Impact on the Earth*

[14] Vitousek P M , Mooney H A, Lubchenco J, Melillo J M (1997) 'Human domination of Earth's ecosystems', *Science* 277 (25 July): 494–499.

[15] Edward Wilson (1992) *The Diversity of Life*, Harvard University Press.

[16] Vitousek P M, Ehrlich P R, Ehrlich A H and Matson P A (1986) 'Human appropriation of the products of photosynthesis', *BioScience* 36: 368–373

[17] Hannah, L *et al*, (1994) 'A preliminary inventory of human disturbance of world ecosystems', *Ambio* 23: 246–250.

[18] Myers, R., and Worm, B. 2003, 'Rapid worldwide depletion of predatory fish communities', *Nature*, vol. 423, pp. 280-283.

[19] Millennium Ecosystem Assessment

[20] Millennium Ecosystem Assessment

[21] Vitousek P M , Mooney H A, Lubchenco J, Melillo J M (1997) 'Human domination of Earth's ecosystems', *Science* 277 (25 July): 494–499

[22] Lester R. Brown (2006) *Plan B. 2.0: rescuing a planet under stress and a civilization in trouble*, W.W. Norton, New York, for the Earth Policy Institute.

[23] Paelke, R. (2005) 'Sustainability as a bridging concept', *Conservation Biology* 19: 36-8.

[24] Newton, J.L. and Freyfogle, E.T. (2004) 'Sustainability: a dissent', *Conservation Biology* 19: 23-32.

[25] Edward Wilson (1992) *The Diversity of Life*, Harvard University Press, p. 33.

[26] Environmental health and human wellbeing are core concepts in the IUCN Programme 2005-8.

[27] Sen, A. (2001) *Development as Freedom*, Oxford University Press.

[28] Paehlke, R. (2005) 'Sustainability as a bridging concept', *Conservation Biology* 19: 36-8, p. 36.

[29] Orr, D. (2006) 'Framing sustainability', *Conservation Biology* 20: 265-6, p. 266.

[30] Lester R. Brown (2006) *Plan B. 2.0: rescuing a planet under stress and a civilization in trouble*, W.W. Norton, New York, for the Earth Policy Institute.