

**Global Biodiversity Sub-Committee (GBSC)**

Thematic Report

**Report of the Millennium Ecosystem  
Assessment Workshop**

February 2006

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## **Report of the Millennium Ecosystem Assessment Workshop held 3 February 2006, London**

### ***Evaluating the Millennium Ecosystem Assessment: messages, knowledge gaps and policy implications***

The Millennium Ecosystem Assessment (MA) is an international work programme designed to meet the needs of decision makers and the public for scientific information concerning the consequences of ecosystem change for human well-being and options for responding to those changes. The MA focuses on ecosystem services (the benefits people obtain from ecosystems), how changes in ecosystem services have affected human wellbeing, how ecosystem changes may affect people in future decades, and response options that might be adopted at local, national, or global scales to improve ecosystem management and thereby contribute to human well-being and poverty alleviation. More information on the MA can be found at [www.millenniumassessment.org](http://www.millenniumassessment.org)

The Global Biodiversity Sub-Committee (GBSC) of the UK Global Environmental Change Committee (GECC) organised a one day workshop on 3 February 2006 at the Royal Horticultural Halls in London. The aim was to evaluate the MA with 53 participants from Government departments and agencies, research organisations, academic and research institutes (for participant list see: <http://www.jncc.gov.uk/page-4629#me>).

The workshop was structured around critical reviews of the MA, presented by 6 eminent speakers, and parallel breakout groups drawing out key issues to be addressed (for the MA workshop programme see: <http://www.jncc.gov.uk/page-4629#me>).

The overarching aim of the workshop was to develop an overview of the strengths and weaknesses of the MA:

- those elements that can be used to support policy development
- those elements that should be approached more cautiously
- identifying priority gaps in the science to be addressed

The guest speakers focused on the key findings of the MA, its strengths, weaknesses, gaps in knowledge and future needs.

There were a total of 5 breakout groups, 3 parallel sessions in the morning and 2 parallel sessions in the afternoon. The morning sessions were based on key questions on biodiversity, and focused on 3 key themes from the MA Biodiversity Synthesis report: *Ecosystems and Human Well-Being*. The afternoon sessions discussed how to apply and use the MA in the future.

The groups considered the constraints of the key messages, the robustness of the science (methodologies etc.), an evaluation of the evidence base, knowledge and methodological gaps in the MA and future requirements. Each breakout group also discussed a number of specific issues relevant to its theme.

This report is a synthesis of the discussion from the breakout groups, but does not represent consensus. It was prepared by the GECC GBSC, in conjunction with the breakout group chairs and rapporteurs.

## **Breakout group 1: Assessment of Trends**

Chair: Dave Raffaelli (University of York), Rapporteur: Stephen Grady (JNCC)

### **Theme: Assessment of Trends**

What are the current trends and drivers of biodiversity loss? What is the current condition and historical trends of ecosystems and their services? What have been the consequences of changes in ecosystems for human well-being?

### **Breakout group questions:**

1. Will the current drivers of changes to ecosystem services identified in the MA be the same in the future? What are the constraints of the methodologies used to assess the trends i.e. are they applicable to other settings?
2. How do we evaluate the 'true' cost of biodiversity loss, (incorporating intrinsic, social and economic costs)?
3. How can we ensure we have indicators which are sensitive enough to be receptive to changes in the environment, for example, so that policy makers can be sure that we are dealing with up to date, correct information on trends?

### **Discussion:**

#### **1. Will the current drivers be the same in the future?**

The participants focused on trends in drivers of ecological function and ecosystem service output. New drivers (and hence scenarios) different to those included within the MA report will be difficult to predict, but several existing drivers are certain to change in intensity and importance, such as global human population, technology (e.g. agriculture) and climate change. Further, heterogeneity within global processes will increase as the footprints of growing regional economies, e.g. India and China, enlarge. There are often geo-political mismatches between drivers and effects. Policy makers will need to be aware of the subtleties of the relationships between drivers and effects across local, regional and global scales. General messages may not be possible for some drivers, for example, where the effects are at the local level.

The MA Biodiversity Synthesis Report is very strong in its analysis of the key drivers past and present, but a forward look over the next 50-100 years is needed urgently. In this respect the role and impact of indirect drivers needs to be assessed, as these could overwhelm the effects of direct drivers. Barriers e.g. market failure, and perverse economic incentives, also need to be acknowledged in such analyses.

It will be important for future initiatives to ensure that the different natural, economic, social and political disciplines are involved right from the start. The research community and the agencies will need to be pro-active in encouraging work across the disciplines.

There is an assumption, particularly among policy makers, that the dynamics of change will be linear and that only differences in the rates of change need to be considered when formulating policy. However, it is increasingly obvious that the dynamics of coupled socio-economic systems and the resultant impact on ecological systems can be markedly and unpredictably non-linear, presenting challenges to policy makers who therefore need to be precautionary in their approach. In addition, different combinations of the drivers of change will affect services in different places. Furthermore, ecosystem services do not operate in isolation. There are often

composite effects and there can be trade-offs between them. Managing uncertainty requires new perspectives and paradigms, as well as communicating risk to political decision-makers and stakeholders.

## **2. What is and how do we evaluate the ‘true’ cost of changes in biodiversity, incorporating intrinsic (non-market costs, cultural, aesthetic etc) and true social and economic costs.**

The cost of biodiversity loss is likely to be manifested in changes in ecosystem service delivery, although the causal relationships are still far from clear i.e. how key drivers of change affect services. Biodiversity loss will lead to reduced resilience, diminished insurance options, and reduced capacity in the system. Because the linkages are not well understood at present, the group focussed on the true cost of changes in ecosystem services, rather than biodiversity *per se*.

One of the strengths of the MA is that it provides a useful template to look at ecosystem services in detail. Provisioning services (food, water, fuel) are the most straightforward to value, regulating and supporting services less so. Intrinsic elements (culture, aesthetics, spiritual) have proved challenging in this respect. Much more technical work is required on valuation approaches.

The true cost (and benefits) from changes in ecosystem service delivery are borne by different people depending on the services. Therefore issues of equity as well as financial aspects need to be considered.

To support policy development, the group suggested that efforts should be targeted at improving knowledge and understanding the linkages and relationships between biodiversity and ecosystem services, and developing the tools needed to assess ecosystem values.

Capacity will need to be built in the UK and overseas in order to carry out the kind of research exemplified by sub-regional assessments within the MA, especially at the local level. The Darwin Initiative provides an excellent model of such an initiative and is one which could be extended and emulated.

The current approach to conservation in the UK via the UK Biodiversity Action Plans (BAP) is species- and habitat-centric. The recommendations of UK Biodiversity Research Advisory Group (BRAG) socio-economic working group could be better explored, specifically the inclusion of further consideration of ecosystem services within the UKBAP.

The group recalled the importance of ‘full cost accounting’ in terms of assessing the wider impact of new policies. Accounting for externalities e.g. how UK demand patterns will impact ecosystem services overseas, is important.

## **3. How can we ensure that we have indicators sensitive enough to be receptive to changes in the environment, so that policy makers can be sure that we are dealing with up to date and correct information?**

Effective and appropriate indicators need to reflect the thresholds of change which society is prepared to accept. These limits to acceptability constantly vary, as society’s knowledge and understanding, and hence its goals, change over time. Policy

instruments therefore need to be developed which are sufficiently flexible to take account of such change, and which do not prevent options for future use in an uncertain future.

Indicators also need to be developed that are effective at the relevant scale. Indicators serve different purposes at different scales. The group felt that it would be initially easier to identify what ecosystem services are valued at the local scale (as opposed to regional or global scales) in order to form appropriate measurable indicators.

Stakeholders and the wider public need to develop a greater appreciation of the ecosystem services which are relevant to them; what the acceptable levels of service are at a particular time and place; the risks to which each of the services is exposed; and the consequences for human well-being if those ecosystem services are lost or diminished.

Indicators should reflect the process of interest, rather than what can be measured precisely. They need to be relatively easy to update. However; in order to detect real change, they should not be overly sensitive to year-on-year variation of biodiversity or ecosystem services; and they should have high statistical confidence. It is vital to know what data are available and how they can be used to provide the best value, given the uncertainties that exist about future states. Whilst there are data sets for many elements of biodiversity, this is not the case for ecosystem services.

It will be difficult to construct indicators which are both sensitive over a policy relevant timescale but which are not too volatile so as to mask important signals. At present, our knowledge base for designing such indicators is inadequate and represents a real science gap.

On a broader issue, whilst indicators are certainly useful for characterising the system, there is a need to develop other kinds of tools, such as policy communication tools, to support decisions in areas where development of indicators is weak.

## **Breakout Group 2: Scenarios**

Chair: Geoff Boxshall (Natural History Museum, Royal Society), Rapporteur: Rachel Garthwaite (Royal Society)

### **Theme: Scenarios**

What is the future for biodiversity and ecosystem services under plausible scenarios? Given plausible changes in primary drivers, what will be the consequences for ecosystems, their services, and human well-being?

### **Breakout group questions:**

1. How realistic/robust are the scenarios presented by the MA? What do they tell us about other possible real world scenarios for the future?
2. How good is the evidence base?
3. How good are the underlying models?
4. How is biodiversity addressed in the scenarios?
5. How do we interpret the global scenarios at a regional/local scale? What would make the scenarios more relevant to the UK situation?
6. Are the scenarios useful in the context of CBD? Do they relate to policy makers concerns?

### **Discussion:**

#### **1. How realistic/robust are the scenarios presented by the MA? What do they tell us about other possible real world scenarios for the future?**

Participants noted that the use of the scenarios must be appropriate and that they are not intended to be predictions. The emphasis should be placed on the models used and the information these provide rather than the scenario outcomes themselves.

There was general agreement that the timeframe (to 2050) was appropriate.

The scenarios give an impression of linearity, but many systems particularly aquatic systems, do not behave in a linear way. This raised a question about their utility. Thresholds within ecosystem processes were identified as a missing factor in the scenarios. For example what are the points beyond which systems behave unpredictably or extremely, and what are the risks and likelihoods, taking into account the possibility of time lags and transparent thresholds. This information is important for providing more realistic scenarios.

Some participants felt that the scenarios did not present realistic outcomes and questioned their utility. Others felt that the value of the scenarios was not in the outcomes they presented, but in the process used to identify drivers, their interrelationships, and their relative importance in determining both predictable and unpredictable outcomes. It was considered that this is potentially useful information that could be fed into testing of future models.

It was unclear as to whether the four scenarios were considered to represent the range of possible outcomes. It was noted that none of the scenarios was completed on a business as usual basis which would have been useful.

All four scenarios concluded that biodiversity loss would continue at varying rates to 2050. The fact that all scenarios reached the same conclusion - inevitable biodiversity decline - indicates a robustness that is not dependent on scenario assumptions. It was

suggested that scenarios should place more emphasis on the effects of rates of change rather than the characteristics of the changes themselves.

## **2. How good is the evidence base?**

The MA is largely a synthesis of existing evidence. It did not seek to add to the evidence base on status and trends. The participants agreed that the MA confirmed what scientists have been saying about biodiversity decline, however the data on which this assessment was made was limited. The MA provides a stimulus to improve the evidence base globally.

Thresholds of ecosystem processes were missing in the scenarios but this reflects the lack of data on such tipping points.

## **3. How good are the underlying models?**

After discussion of the underlying models it was agreed that it is essential for the models to be tested using other biodiversity data, and that, in particular, data from aquatic ecosystems should be a priority.

There was some criticism of the basic methodology used to develop the scenarios (e.g. assumptions, decision making, choice of axes). Participants would have liked greater transparency to enable greater peer review of the methodology, models, assumptions and justifications for scenario choices. The ability to critique the IMAGE<sup>1</sup> model in terms of the appropriateness of the processes (e.g. biodiversity feedbacks) was specifically identified as an issue. Limitations of the global models for plant biodiversity loss were recognised.

The approach taken by the IPCC to developing scenarios was discussed. The IPCC had found the scenario process useful but they quickly moved beyond a scenario approach (because of high uncertainties associated with the scenarios) to a risk management approach. In particular, it was felt that the IPCC use of multiple models was useful for identifying areas of uncertainty and model sensitivity. It was however noted that there are major differences in complexity: the MA is built on fewer data but a much greater number of variables. For this reason scenarios may have more value for the MA process, particularly for the development and testing of models. It was recommended therefore that work should continue in scenario development (across a range of scales).

More work is required on valuation, particularly of non-market goods and services, on linking human well-being and ecosystem services and improving the evidence base describing this relationship.

## **4. How is biodiversity addressed in the scenarios?**

All four MA scenarios envisage a common outcome - that biodiversity loss would continue. It was agreed that the inclusion of additional biodiversity data (e.g. vertebrate information) would be unlikely to change this high-level conclusion outcome.

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<sup>1</sup> IMAGE, the Integrated Model to Assess the Global Environment, was one of the four core models used for the global MA. (see: <http://www.millenniumassessment.org/en/products.global.scenarios.aspx> p157)

However, this so called “negative stacking” of the scenarios was also identified as a potential risk; i.e. it might be inferred that there is little that can be done to stop biodiversity decline. Consequently, there could be value in the development of “biodiversity-centric” scenarios (those that result in halting biodiversity decline or other positive biodiversity outcomes).

The MA provided useful insight into the importance of the relationship between poverty and biodiversity. However, further work was needed to understand these dependencies and the vulnerability to change, including the links between biodiversity, appropriation (or property) regimes and poverty.

### **5. How do we interpret the global scenarios at a regional/local scale? What would make the scenarios more relevant to the UK situation?**

In terms of the biodiversity assessment, some participants felt there was no value in applying the scenarios in the UK environment. This was partly because of the state of the biodiversity but also because much is already known about the drivers of UK biodiversity loss. Furthermore much of the UK populations impact is overseas through its global footprint so a global approach is needed. However, others disagreed with this and felt there was value to be gained from application of the MA model at the UK level. Availability of good quality data could help to test the assumptions of the models, to test the identity of key drivers and their relative importance, to identify where the predominant pressures and inter-relationships are and important interactions. This could be useful for upscaling and feeding into the global assessment.

### **6. Are the scenarios useful in the context of CBD? Do they relate to policy makers concerns?**

The participants noted that the MA addresses a number of multi-lateral environmental agreements and has a broader perspective than the Convention on Biological Diversity (CBD). It also predates the establishment of global goals and targets within the CBD and, as a result, the scenarios are useful for informing the CBD but do not match (for example) the work programme objectives or targets. It may therefore be difficult for the CBD to translate the results of the MA (in terms of work programmes, measures, targets, indicators etc). However, it was agreed that the MA added value to the CBD by virtue of its findings and their reaffirmation of CBD objectives.

There was some debate on the relevance of scenarios for policy makers. The scenarios do not provide information about uncertainty and, while they identify the potential range of impacts, they do not provide information regarding their probability. From this perspective the scenarios were thought to be the weakest part of the MA. The group voiced some concerns about the potential use of the scenarios by policy makers and their potential for misdirection if they are interpreted literally. It is important that the emphasis is placed on the underlying models for providing focus on where governments should be placing their efforts.

It was felt that the scenarios help identify potential conflict between the Millennium Development Goals and the lessons drawn from the Millennium Ecosystem

Assessment, for example for raising awareness that trade-offs will be necessary. This is useful information for decision makers.

### **Breakout Group 3: Responses**

Chair: Colin Galbraith (Scottish Natural Heritage), Rapporteur: Steve Gibson (JNCC)

#### **Theme: Responses to the MA**

Key questions on biodiversity in the MA: What response options can conserve biodiversity and promote human well-being? What can we do to enhance human well-being and conserve ecosystems?

#### **Breakout group questions:**

1. MA responses- how were they generated and presented in the MA?
2. What constraints are there on the continued use of the methods used in the MA?
3. How can these responses be translated from global to regionally/locally based action by government, civil society, NGOs?

#### **Discussion:**

Breakout group 3 considered the responses section of the MA. The group's recommendations cover both the MA, and, inevitably, broader issues of the relationship between science and policy.

The group believed that the complexity of the MA now needs simplification to be useful for decision-makers. However, this needs to avoid giving the impression that the MA, the problems it highlights, or the possible solutions are simple.

The group recognised that the MA had avoided clashing with state sovereignty by avoiding doing any more than stating the problems. However, States now needed to use the MA, both in its current form and as a model for country studies (considering the environment and human health, and domestic and global footprints aspects for a country), in order to understand the specific causalities and solutions at the State level where action is possible.

The group discussed the communication of science to policy makers. It is evident that even when science shows a particular negative outcome is highly likely, appropriate policy responses do not always follow. This is for many reasons, such as that communication of science needs to be able to convey the complex issues of uncertainty, risk, and precaution to lay-people, both public and policy makers, yet not cloud the messages (the public and policy makers' view of risk is often at odds with statistical evidence). However, consumer (societal) choice can also be a strong driver of change, providing it is properly informed to allow its choices to be made soundly.

The group considered it essential that the current debate on growth was moved beyond received economic views and onto a more appropriately sophisticated level, that recognised the value of natural assets and the costs of their misuse appropriately. The MA enables capital accumulation as a growth model. The group recognised that economic development will continue, although issues such as HIV and decline in energy availability will send this into reverse in some places, and agreed with the MA that the current path of development will result in collapse of ecosystems and their services, with consequential negative impact on our society and current views on the economy; failing to recognise environmental assets now requires re-investment later to salvage even a small part. More efforts are needed to value global public goods,

and this should *inter alia* be pursued through integration in global financing mechanisms and multilateral agreements, and urgent attention to negative and positive subsidies. The 2010/2012 targets should be a catalyst for action in this respect.

Future research to understand the value of ecosystem services needs to integrate the social and natural disciplines and this would be especially facilitated by a common funding stream. Energy, health & climate were considered priorities in this respect. Additionally, research needs to work from the starting point of ecosystem services, who benefits and how these benefits feed traditional economic accounting, rather than starting from the perspective of ecosystem function and what services that delivers. The private sector, especially those involved in work overseas, would be important partners in any research on footprinting. The UK is an internationally important repository of data on other countries, that would be invaluable to those countries in understanding their environments, the changes they are undergoing and the responses necessary.

The group believed that developing the MA's responses into a framework for both action to decouple growth from damage to ecosystems and for measurement of success would be a powerful means of taking forward the MA and a tangible tool for policy advice. This would equally benefit from an audit of the UK's current use of the responses presented in the MA.

## **Breakout Group 4: Using the MA for decision making**

Chair: Glenys Parry (Defra), Rapporteur: Madeleine Garlick (Defra)

### **Theme: Using the MA for decision making in UK and biodiversity-related international agreements**

How can the findings and the methodologies of the MA be used in decision making in the development of biodiversity and other policy, in the UK and abroad? How do the findings of the MA effect other sectors?

#### **Breakout group questions:**

1. How do we use MA for decision making in UK and biodiversity-related international agreements?
2. How do we make the link between biodiversity and ecosystem services?
3. What are the most important elements of the MA (findings and methods) which should be:
  - a.) promoted in biodiversity related international agreements?
  - b.) used within policy development in the EU and UK?
4. How can the MA (processes or findings?) become integrated into the policy or functioning of key groups (Defra, other HMG ie DFID, NGOs, Research community, MEAs, business)? What needs to change from how things are done now?
5. What are the most important elements of the multi-scale assessments (Sub-global reports)? How should they be used: (a) internationally; and (b) in UK?

#### **Discussion**

##### **1. How do we use the MA for decision making in UK and abroad**

The MA Biodiversity synthesis lays out the key factors for successful responses to biodiversity loss. It was suggested that the UK government could structure their response around these.

Defra highlighted that during a recent meeting to discuss the upcoming Spending Review, the MA was used to illustrate the complexity of ecosystem functioning and the effects on the environment and society. Hence the need for a multi-pronged response. The difficulty would be in deciding which parts of this response to prioritise for funding support.

The question of what the UK is uniquely qualified to contribute to global efforts was discussed. The UK could take the MA and use its methodologies and conceptual framework to conduct a UK level study of implications (including the UK's international footprint). This study could be used to design a uniquely formulated UK response.

The UK holds some of the major taxonomic institutions in the world, and they could contribute by treating their data as a global public good by making data on species freely available. Some expressed the view that government support for these institutions is declining. It was also noted that while there does exist a need for documentation and inventories, the UK should be focusing efforts on actually conserving biodiversity.

The important need for more research on the role of ecosystem services, their flow, and their links to biodiversity were also highlighted (also discussed in Group 1). The focus of this work should be on ecosystem services which are important to people. At the UK level, thinking often fails to make the link between resources and people, but this is more important at a global level as the world's poorest have a daily reliance on ecosystem services to provide them with the means to survive. For this reason, the messages of the MA need to be considered by those whose mandate is to alleviate poverty i.e. development agencies.

The MA should be offered to all departments preparing horizon scanning exercises and policies, to help educate decision makers about the importance of biodiversity and ecosystem services for their organisation.

The focus of UK interventions should be broader than biodiversity decision making, since there are other major drivers of change which must be considered, such as pollution. The implications of the MA should be considered for all multilateral environmental agreements. It was noted that trade and business play very important roles as the drivers of biodiversity loss, but also as the holders of the potential levers for halting this loss.

The MA's message could be promoted via:

- Inclusion in various media, such as television documentaries, production of books (NGOs have a key role to play in this area).
- Ministers should also take the opportunity in their public engagements to promote the messages of the MA and use the 'language' of ecosystem services.
- The studies could be translated into popular literature to reach a wider audience
- The general public's interest in climate change could also be exploited, for example, by exploring possible opportunities for links with the BBC's planned programmes on climate change.

Delegates also highlighted the problem of getting fit for purpose, policy relevant advice/expertise to the main decision making bodies (in the UK and internationally). Internationally, the consultation on the need for an 'IMOSEB<sup>2</sup>' could be a platform to develop this role. Domestically, the GBSC (who were running this event) could put forward a special report on the MA for its parent committee, the Government's Global Environmental Change Committee (GECC) to highlight the importance of the MA. This would stress the importance of this issue to a wider audience, including ministers and the Government's chief scientist.

## **2. How can we use the MA process and findings to change the functioning of key groups? What needs to change from how things are done now?**

The Research Councils could be invited to investigate options for a joint initiative to look at the interaction between natural and social sciences. The 'Tyndall model'<sup>3</sup> could provide a useful model for action.

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<sup>2</sup> IMOSEB is the International Mechanism of Scientific Expertise on Biodiversity. The website for the consultative process towards an IMOSEB is <http://www.imoseb.net/>

<sup>3</sup> Tyndall Centre's Integrated Assessment Model (IAM)

The current policy framework for human and ecosystem welfare is the UK's Sustainable Development Strategy (SDS). This should be assessed against the MA to find out how sensitive it is to MA findings, what can be learnt from the MA processes, how the SDS is currently held back in better realising its aims, and what MA messages should be included.

The Group questioned how the MA fits in with Strategic Environmental Assessment<sup>4</sup> processes. It was felt that the MA framework/findings should be included in the criteria for conducting such assessments.

Some other possible mechanisms and strategies where the MA should be integrated include the review of the EU Sustainable Development strategy, the upcoming EC Biodiversity Communication, the 7<sup>th</sup> Framework Programme, and the 6<sup>th</sup> Environmental Action Program. The MA findings and conceptual framework could also be included in the review of the UK BAP.

The idea of creating champions for the MA was suggested. Key groups should think through the implications of the findings for their institutions, and promote the messages and findings of the MA within their institutions. The responses by individual organisations would need to be tailored accordingly. It was suggested that business champions would also be needed and welcomed.

It was noted that the strategic plan of the DIVERSITAS<sup>5</sup> programme (an international programme of biodiversity science) already takes into account the MA recommendations. All organisations and individuals involved in DIVERSITAS are effectively endorsing the MA.

The MA table on drivers of biodiversity loss is a useful tool for promoting the findings of the MA. The Centre for Ecology and Hydrology (CEH) were already using this table to explain their research priorities for this year.

Partnerships with developing countries could be explored. For example, the China council for international cooperation and development have a working group on ecosystem services taking forward work on the MA in China. The UK could try to influence this process (via DfID<sup>6</sup>). DfID could also use the MA findings to inform the requirements for their in-country work. Another lever would be to utilise the British Council libraries, which are popular resources in many countries. All of these libraries should carry a copy of the MA studies.

### **3. What are the most important elements of MA findings and methods to promote in international environmental agreements and in the UK?**

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<sup>4</sup> Strategic Environmental Assessment is the process of assessing the impacts of plans or programmes likely to have significant effects on the environment. Information on the EC Strategic Environmental Directive can be found at <http://www.odpm.gov.uk/index.asp?id=1143277>

<sup>5</sup> DIVERSITAS brings together biological, ecological and social sciences to address key questions that underlie our limited understanding of the current situation. More information can be found at <http://www.diversitas-international.org/index.php>

<sup>6</sup> UK Department for International Development

Some delegates felt that the Technogarden scenario spelt out the dangers of an over-reliance on the use of environmental technology.

The need to focus efforts at the ecosystem level, in order to ensure an appropriate response to the relevant drivers of ecosystem change, was emphasised.

Some delegates felt that the MA's messages regarding the links between ecosystem services and human health were especially important for consideration by policy makers. Some felt that the scenarios included in the MA should act as an incentive for other organisations to develop further plausible scenarios.

The current UK conservation policy approach to biodiversity rather than ecosystem services was questioned by some. It was also pointed out that the Biodiversity Research Advisory Group (BRAG) is currently under review and will consider the future direction of the group. BRAG could consider the most significant research issues it should be addressing, and the role of the MA in the work of the Group.

The need for integrated decision making across departments was highlighted, with the example of the management of flood plains in the UK.

It was felt that it would be valuable to engage in dialogue with the Department for Education and Skills, using the MA messages in the development of the UK science curriculum.

## **Breakout Group 5: Scientific assessments: lessons learnt and future needs**

Chair: Andy Stott (Defra), Rapporteur: Karen Dickinson (Defra)

### **Theme: Scientific assessments: lessons learnt and future applicability of the MA**

The Chair set the context with reference to proposals arising from the Paris Conference on Biodiversity Science and Governance on the need for an international mechanism on scientific expertise and the 8<sup>th</sup> meeting of the Parties to the Convention on Biological Diversity which would decide whether to set a timeline and process for considering the need to another integrated assessment<sup>7</sup>.

### **Breakout group questions:**

As a framework for assessing the need for future (scientific or intergovernmental) assessments, the group discussed:

1. What worked well and what could be done differently or better in the MA.
2. How to generate better involvement of scientists and better quality of science.
3. How to generate better buy in from governments.

### **Discussion:**

The group discussed the strengths and weaknesses of the MA. The following list includes what worked well:

- Conceptual framework
- Theme for integrated analysis
- Multidisciplinary coverage
- Open process and international engagement. Legitimacy as a UN process.
- Strong science process and depth of work, across scales and direct / indirect drivers without the burden of intergovernmental process
- Presentable to wide range of audiences and other specific uses
- It provides a useful evidence base for policy makers and does not prescribe what policy makers should do. This is a positive from the assessment, but also a weakness that this leap was not made.
- The ‘Millennium’ branding of the MA gave it a one off status as a ‘shooting star’ and is perceived as an iconic assessment.

The group felt that the following factors were areas which should be improved in future assessments and work related to the MA:

- Key sectors were not engaged earlier in process, e.g. Government and social scientists which created a lack of buy-in from important sectors
- Key themes not taken into account, e.g. spatial planning and socio-economic contexts, and the marine environment (covers 70% of planet, but only 2% of assessment)
- Poor communication of results and outreach, especially beyond the scientific community
- Problems with scaling up and down and lack of take up of results
- Making more formal use of sub-global assessments
- Gaps and weaknesses of MA governance structures

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<sup>7</sup> COP Decision VIII/9, Implications of the findings of the Millennium Ecosystem Assessment

- Countries need to be more involved but not necessarily through an inter-governmental process. Need buy in at the national level.

The group went on to discuss whether another assessment was needed, and if so, for what purpose.

Assessments should be clear whether they are meeting science or policy needs. Scientific assessments need to retain their independence, but it was also argued that such assessments could be linked to intergovernmental process so that the outcomes of the assessment can be easily transferred to the policy world. Intergovernmental processes can be burdensome, but they can provide government buy in, which can often be missing from purely scientific assessments. National government buy-in was seen as a key requirement for making assessments useful.

The role of sub-global or regional assessments was discussed and were generally perceived as useful tools for communicating to both a scientific and policy audience. The MA sub-assessments worked at different scales and places, all which used a different way to assess ecosystems. It was however recognised that global and national assessment processes have different approaches.

The group also saw potential to develop common frameworks at a national level to potentially build up to global frameworks. However, the capacity of developing countries to do this is an issue. Initiatives such as Defra's Darwin Initiative provide such scientific capacity building. The EU could also consider a process for funding under a similar scheme for furthering MA assessments.

The group asked why would we want more assessments, and what questions governments want answered? The use to which assessments would be put (whether for policy making or science) should define the requirements of them. It was agreed that any assessments need to have policy relevant results with good strong science underpinning it. They need to provide the government with direction and information to better inform policy.

The MA was perceived as very policy relevant. It was established to respond to questions from multi-lateral environment agreements, but there is a gap between the assessments and policy making.

Communicating the message of biodiversity remains critical, in particular to other sectors (e.g. trade) where the decisions being made have major impacts on biodiversity. There is lower take up of the biodiversity message because the take home message is complex and there is no single guilty party (unlike climate change). Communication to the people, rather than the Government, was also seen as important opportunity.