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IN-DEPTH REVIEW OF THE APPLICATION OF THE ECOSYSTEM APPROACH

Relevance of the Millennium Ecosystem Assessment to the application of the ecosystem approach

Note by the Executive Secretary

I. INTRODUCTION

1. In decision VIII/11, the Conference of the Parties, in the refined multi-year programme of work (annex II), decided to undertake the in-depth review of the ecosystem approach at its ninth meeting and in decision VIII/15 (annex III) provided guidelines for the review of the programmes of work of the Convention.

2. In decision VII/11, para. 6, the Conference of the Parties notes the relevance of the conceptual framework of the Millennium Ecosystem Assessment (MA) in supporting the implementation of the ecosystem approach. In decision VIII/9, the Conference of the Parties: in para. 1, recognized that the MA reports include key findings relevant to the implementation of the Convention's programmes of work; in para. 2, decided to consider the findings of the MA in the implementation and the future review of the programmes of work and cross-cutting issues under the Convention; in para. 22, requested the Subsidiary Body on Scientific, Technical and Technological Advice to draw upon the lessons learned and to make use as appropriate of its conceptual framework and methodologies in further developing work on, *inter alia*, the ecosystem approach; in para. 24 requests the Executive Secretary to draw upon relevant information from the MA and other relevant sources in, *inter alia*, meeting documentation; in para. 28, requested the Subsidiary Body on Scientific, Technical and Technological Advice and the Executive Secretary to contribute to the evaluation of the MA, due to be undertaken during 2007 by the institutions represented on the Millennium Ecosystem Assessment Board, focusing in particular on the impact of the MA on implementation of the Convention at global, regional, national and local levels; and para. 29, decided to consider, at its ninth meeting, the evaluation of the MA to be undertaken during 2007, and the need for another integrated assessment of biodiversity and ecosystems, taking into account the future plans of the Global Biodiversity Outlook, as well as the outcomes of the current and future processes of the Global Environment Outlook of the United Nations Environment Programme, and scientific

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assessments that may be undertaken by the Subsidiary Body on Scientific, Technical and Technological Advice.

3. In response to these decisions, the Executive Secretary has prepared this summary of the relevance of the methodology, analysis and outcomes of the MA in the context of the review of application of the ecosystem approach.

II. RELEVANT FINDINGS OF THE MILLENNIUM ECOSYSTEM ASSESSMENT (MA)

4. The entire assessments and findings of the MA (http://www.maweb.org/en/index.aspx) are relevant to the application of the ecosystem approach. Some general findings particularly relevant in the context of the application of the ecosystem approach are as follows.

Condition and trends:

5. The ecosystem approach is designed to achieve the objectives of the Convention in a balanced way. Condition and trends in ecosystem services are an indication of how well we are achieving such a balance and, therefore, an indication of the application of the ecosystem approach.

6. The findings of the MA are that over the past 50 years, humans have changed ecosystems more rapidly and extensively than in any comparable period of time in human history, largely to meet rapidly growing demands for food, fresh water, timber, fibre, and fuel. This has resulted in a substantial and largely irreversible loss in the diversity of life on Earth. The changes that have been made to ecosystems have contributed to substantial net gains in human well-being and economic development, but these gains have been achieved at growing costs in the form of the degradation of many ecosystem services, increased risks of nonlinear changes, and the exacerbation of poverty for some groups of people. These problems, unless addressed, will substantially diminish the benefits that future generations obtain from ecosystems. All provisioning, regulating, and cultural ecosystem services are projected to be in worse condition in 2050 than they are today in only one of the four MA scenarios. At least one of the three categories of services is in better condition in 2050 than in 2000 in the other three scenarios. Consumption of ecosystem services is slowly being decoupled from economic growth. The MA also concludes that the degradation of ecosystem services could grow significantly worse during the first half of this century and is a barrier to achieving the Millennium Development Goals and Targets for 2015.

7. The challenge of reversing the degradation of ecosystems while meeting increasing demands for their services can be partially met under some scenarios that the MA has considered, but these involve significant changes in policies, institutions, and practices that are not currently under way. Many options are presented by the MA to conserve or enhance specific ecosystem services in ways that reduce negative trade-offs or that provide positive synergies with other ecosystem services. The degradation of ecosystem services represents loss of a capital asset. While degradation of some services may sometimes be warranted to produce a greater gain in other services, often more degradation of ecosystem services takes place than is in society's interests because many of the services degraded are "public goods."

Constraints to sustainable management of ecosystems:

8. Since the ecosystem approach is a framework to achieve development in a balanced and sustainable way, many barriers to the sustainable management of ecosystems, identified by the MA, largely mirror barriers to the application of the ecosystem approach. The MA identified that these barriers[2/] and for current purposes they are grouped as follows:

[2/] Millennium Ecosystem Assessment, 2005. *Ecosystems and Human Well-being: Synthesis*. Island Press, Washington, DC. Page 20.

(a) *Inappropriate institutional and governance arrangements*: including the presence of corruption and weak systems of regulation and accountability;

(b) Market failures and the misalignment of economic incentives:

(i) Most resource management decisions are most strongly influenced by ecosystem services entering markets; as a result, the non-marketed benefits are often lost or degraded. These non-marketed benefits are often high and sometimes more valuable than the marketed ones;

(ii) The total economic value associated with managing ecosystems more sustainably is often higher than the value associated with the conversion of the ecosystem through farming, clear-cut logging, or other intensive uses. The economic and public health costs associated with damage to ecosystem services can be substantial; and

(iii) Although a country's ecosystems and its ecosystem services represent a capital asset, the benefits that could be attained through better management of this asset are poorly reflected in conventional economic indicators;

(c) *Social and behavioural factors*: including the lack of political and economic power of some groups (such as poor people, women, and indigenous peoples) that are particularly dependent on ecosystem services or harmed by their degradation;

(d) *Insufficient knowledge*: particularly concerning ecosystem services and management, policy, technological, behavioural, and institutional responses that could enhance benefits from these services while conserving resources. Effective management of ecosystems is constrained both by the lack of knowledge and information about different aspects of ecosystems and by the failure to use adequately the information that does exist in support of management decisions; and

(e) *Time-scale:* it is difficult to assess the implications of ecosystem changes and to manage ecosystems effectively because many of the effects are slow to become apparent, because they may be expressed primarily at some distance from where the ecosystem was changed, and because the costs and benefits of changes often accrue to different sets of stakeholders.

Broad response options:

9. Response options to promote more sustainable management of ecosystems also in many cases represent response options to further the application of the ecosystem approach. The MA assessed 74 response options for ecosystem services, integrated ecosystem management, conservation and sustainable use of biodiversity, and climate change. Three of the four MA scenarios show that significant changes in policies, institutions, and practices can mitigate many of the negative consequences of growing pressures on ecosystems, although the changes required are large and not currently under way.

10. The MA concludes that an effective set of responses to ensure the sustainable management of ecosystems requires substantial changes in institutions and governance, economic policies and incentives, social and behaviour factors, technology, and knowledge. Actions that could substantially lessen the severity of these problems in the next several decades include: the integration of ecosystem management goals in various sectors (such as agriculture, forestry, finance, trade, and health); increased transparency and accountability of government and private-sector performance in ecosystem management; elimination of perverse subsidies; greater use of economic instruments and market-based approaches; empowerment of groups dependent on ecosystem services or affected by their degradation; promotion of technologies enabling increased crop yields without harmful environmental impacts; ecosystem restoration; and the incorporation of non-market values of ecosystems and their services in management decisions. Economic and financial interventions provide powerful instruments to regulate the use of ecosystem goods and

services. Market mechanisms can only work if supporting institutions are in place, and thus there is a need to build institutional capacity to enable more widespread use of these mechanisms. Changes in institutional and environmental governance frameworks are sometimes required to create the enabling conditions for effective management of ecosystems, while in other cases existing institutions could meet these needs but face significant barriers.

11. The MA has identified the following elements of decision-making processes related to ecosystems and their services that tend to improve the decisions reached and their outcomes for ecosystems and human well-being, and hence promote enhanced application of the ecosystem approach:

12. Use the best available information, including considerations of the value of both marketed and non-marketed ecosystem services;

(a) Ensure transparency and the effective and informed participation of important stakeholders;

(b) Recognize that not all values at stake can be quantified, and thus quantification can provide a false objectivity in decision processes that have significant subjective elements - a variety of frameworks and methods can be used to make better decisions in the face of uncertainties in data, prediction, context, and scale;

(c) Strive for efficiency, but not at the expense of effectiveness;

(d) Consider equity and vulnerability in terms of the distribution of costs and benefits;

(e) Ensure accountability and provide for regular monitoring and evaluation; and

(f) Consider cumulative and cross-scale effects and, in particular, assess trade-offs across different ecosystem services.

13. To achieve greater progress toward biodiversity conservation to improve human well-being and reduce poverty, the MA concludes that it will be necessary to strengthen response options that are designed with the conservation and sustainable use of biodiversity and ecosystem services as the primary goal. These responses will not be sufficient, however, unless the indirect and direct drivers of change are addressed and the enabling conditions for implementation of the full suite of responses are established. The MA also notes that ecosystem approaches, as adopted by the Convention on Biological Diversity and others, provide an important frame-work for assessing biodiversity and ecosystem services and evaluating and implementing potential responses.

IV. CONCLUSIONS RELEVANT TO THE REVIEW OF THE APPLICATION OF THE ECOSYSTEM APPROACH

14. The MA is the most comprehensive global assessment to date about the state of the world's ecosystems, future prospects and what needs to be done to achieve biodiversity and human development goals and targets. Noting that the MA deals with issues at the global level, although there are many examples of successful application of the ecosystem approach at the local scale and indeed where global trends with specific problems in specific biomes are being reversed, the following presents conclusions of the implications of the MA for the review of the application of the ecosystem approach.

What does the MA tell us about the extent to which the ecosystem approach is being applied?

15. The current condition and trends in ecosystem services identified by the MA, confirmed by the outcomes of both the first and second Global Biodiversity Outlook, are a clear message of inadequate application of the ecosystem approach. The MA concludes that changes in ecosystem services are

inevitable[3/]. Those collective changes do not in themselves signal poor management. However, the inability to effectively manage ecosystem services collectively in order to optimise overall benefits and achieve overall ecosystem sustainability indicates significant failings in how the world is managing its future.

16. The effective application of the ecosystem approach globally may not alone solve all of the world's environment/biodiversity problems. For example, population growth is an important indirect driver of biodiversity loss and may not be addressed directly using the ecosystem approach. But the ecosystem approach provides a useful framework for managing the impacts of population growth, such as unsustainable use.

17. The MA concludes that it is unlikely that biodiversity and human development targets will be collectively met without the full and effective application of the ecosystem approach. Since global targets are not being met – application of the ecosystem approach is clearly ineffective.

18. The MA notes that the ecosystem approach, as adopted by the Convention on Biological Diversity and others, provides an important frame-work for assessing biodiversity and ecosystem services and evaluating and implementing potential responses.[4/]

What are the reasons why we are failing to manage ecosystem services effectively and how can the ecosystem approach help?

19. The constraints to effective management of ecosystem services identified by the MA can be mitigated through application of the principles of the ecosystem approach (adopted in decision VI/6, section B). Furthermore, the guidance to the application of those principles adopted in decision VII/11 (section A) address each of the issues identified by the MA (a comparison is provided in Annex I). Improved management, therefore, is hindered by inadequate application of the ecosystem approach.

What responses are required?

20. Notably, the MA concludes that unprecedented efforts will be needed to achieve the 2010 Biodiversity Target[5/] and that the changes required are large and not currently under way[6/]. The MA puts particular emphasis on institutional constraints and the need for reform[7/]. The need to build institutional capacity to enable more widespread use of available responses is a key requirement.

21. The ecosystem approach provides a robust economic, ecological and social framework for dealing with the negative impacts highlighted in the MA scenarios as it has been developed through wide consultation by parties to the CBD. It is important to raise the profile of the ecosystem approach so its role in meeting these issues ensures ecosystems are capable of delivering ecosystem goods and services essential for human well-being in a sustainable manner. To date the ecosystem approach has typically been applied mainly to conservation policy. Its application across policy sectors would ensure a sustainable approach to natural resource use, including biodiversity. Some Parties have already assessed their responses to the MA concluding, *inter alia*, that its findings, and conceptual framework, should influence policy making including, importantly, in Ministries responsible for finance and planning.

[3/] Millennium Ecosystem Assessment, 2005. *Ecosystems and Human Well-being: Biodiversity Synthesis*. World Resources Institute, Washington, DC. Page 14.

[4/] Millennium Ecosystem Assessment, 2005. *Ecosystems and Human Well-being: Biodiversity Synthesis*. World Resources Institute, Washington, DC. Page 14.

[5/] Millennium Ecosystem Assessment, 2005. *Ecosystems and Human Well-being: Biodiversity Synthesis*. World Resources Institute, Washington, DC. Page 14. Key messages.

[6/] Millennium Ecosystem Assessment, 2005. *Ecosystems and Human Well-being: Synthesis*. Island Press, Washington, DC. Finding # 4.

[7/] Millennium Ecosystem Assessment, 2005. *Ecosystems and Human Well-being: Synthesis*. Island Press, Washington, DC. Page 98

22. A strength of the ecosystem approach is that it can be applied at different scales, although application at a large scale, for example, at the national level, can be challenging. The MA Conceptual Framework is of considerable help here in that it provides an enhanced methodology for national assessments. The Conference of the Parties, in decision VIII/9, para.26, has already encouraged Parties, other Governments and relevant organizations to make use, as appropriate, of the methodologies and conceptual framework of the MA. The Conference of the Parties has also emphasised the need for capacity-building to support, *inter alia*, the dissemination of findings, methodologies and procedures of the MA (decision VIII/9, para. 27). This review notes that this need should be a major aspect of activities relating to capacity building for the ecosystem approach developed in response to decisions V/6, para. 6, and VII/11, para. 14, of the Conference of the Parties. A manual for implementation of the MA methodology at national level is currently being developed by a consortium under the guidance of the MA Board (on which the Secretariat is represented). Funding for mainstreaming the MA into national planning is also being considered by the financial mechanism.

Annex I

Comparisons of broad issues identified by the MA and principles and guidance of the ecosystem approach (decision VI/6 and VII/11).

Issue identified by the MA	**Example principles of the ecosystem approach**	**Example guidance**
governance:		
	Principle 2 – management should be decentralised to the lowest appropriate level	"Good governance is essential for successful application of the ecosystem approach"
(a) lack of empowerment/ participation of stakeholders	Principle 12: The ecosystem approach should involve all relevant sectors of society and scientific disciplines.	12.3 Procedures and mechanisms should be established to ensure effective participation of all relevant stakeholders and actors during the consultation processes, decision making on management goals and actions, and, where appropriate, in implementing the ecosystem approach. 12.5 When assessing the costs and benefits of conserving, maintaining, using and restoring ecosystems, the interests of all relevant sectors should be taken into account for equitable sharing of the benefits according to national law.
(b) failure to use existing knowledge	Principle 11: The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.	11.1 Relevant information should be shared with other stakeholders and actors and technical and scientific information be made available in an accessible way (indigenous and local knowledge should be treated with full respect of Article 8(j) and further decisions of the CBD). 11.2 Assumptions behind proposed management decisions should be made explicit based on the best available expertise, explicitly regard scenarios of future change and include the knowledge and views of stakeholders. 11.3 Appropriate mechanisms should be developed to document and make more widely available the information from all relevant disciplines (including natural and social sciences) and from relevant knowledge systems, particularly those based on local and traditional practices. This guideline should be implemented consistent with any decision to be taken under Article 8(j) of the CBD.

Issue identified by the MA	Example principles of the ecosystem approach	Example guidance
economic:		
	Principle 4: Recognizing potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context. Principle 5: Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach.	Principle 4: "Any such ecosystem-management programme should":
(a) market failure		(a) Reduce those market distortions that adversely affect biological diversity;
(b) incentives		(b) Align incentives to promote biodiversity conservation and sustainable use;
(c) economic approaches (including effective valuations)		(c) Internalize costs and benefits in the given ecosystem to the extent feasible.
technical:		
(a) the slow response of ecosystems to disturbance	Principle 7: The ecosystem approach should be undertaken at the appropriate spatial and temporal scales. Principle 8: Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term.	7.1 Enhanced capacity is required to analyse and understand the temporal and spatial scales at which ecosystem processes operate, and the effect of management actions on these processes and the delivery of ecosystem goods and services. Identification of spatial patterns and gaps in connectivity should be included in this analysis. 7.2 Functional mismatches in the administration and management of natural resources should be avoided by readjusting the scale of the institutional response to coincide more closely with spatial and temporal scales of processes in the area under management. This logic underpins the current global trend towards decentralized natural resource management. 7.3 Given that ecosystem components and processes are linked across scales of both

Issue identified by the MA	Example principles of the ecosystem approach	Example guidance
		time and space, management interventions need to be planned to transcend these scales. Developing a nested hierarchy of spatial scales may be appropriate in some circumstances. 8.1 Adaptive management processes should include the development of long-term visions, plans and goals that address inter-generational equity, while taking into account immediate and critical needs (e.g., hunger, poverty, shelter). 8.2 Adaptive management should take into account trade-offs between short-term benefits and long-term goals in decision-making processes. 8.3 Adaptive management should take into account the lag between management actions and their outcomes.
(b) lack of technical knowledge in some areas: ecosystem services; management; policy; technological; behavioural; institutional responses		8.5 The capacity to monitor and detect long-term, low frequency changes in ecosystem structure and functioning should be strengthened. 11.5 Good management depends upon improving the information base and scientific understanding of ecosystems through the promotion, implementation and application of research and integrating this information into decision-making.
