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**Agenda Item 6: Emerging themes on the
international environmental agenda**

**6.1. The Millennium
Ecosystem Assessment**

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I. Introduction

1. The Millennium Ecosystem Assessment (MA) was called for by United Nations Secretary-General, Kofi Annan in 2000 in a report to the General Assembly entitled *We the Peoples: The Role of the United Nations in the 21st Century*. Launched in 2001 and completed in March 2005, the objective of the MA was to assess the consequences of ecosystem change for human well-being, and the scientific basis for actions needed to enhance the conservation and sustainable use of those systems. It is an international work programme that has been designed to meet the needs of decision makers and the public for scientific information concerning the consequences of ecosystem change and options for responding to those changes.

2. The Assessment focuses on the condition of ecosystem services – that is, the benefits which people derive from them - at present and potential future effects of changes in ecosystem services on human well-being, as well as possible response options at local, national, or global levels to improve ecosystem management and thereby contribute to human well-being and poverty alleviation. The specific issues addressed in the Assessment were defined through a consultative process and the answers obtained through a synthesis of information obtained from scientific literature, datasets, and scientific models, including knowledge held by the private sector, practitioners, local communities and indigenous peoples.

3. The main findings of the Assessment are set out in the technical volumes of its four Working Groups: Condition and Trends, Scenarios, Responses, and Sub Global Assessments. These findings are synthesized in five publications addressed to specific audiences: Biodiversity, Wetlands, Desertification, Business and Industry, Ecosystems and Human Health. As such, the MA will help to meet the needs of the Parties to the Convention on Biological Diversity (CBD), the Convention to Combat Desertification (UNCCD), the Ramsar Convention on Wetlands (Ramsar), and the Convention on Migratory Species (UNCMS), as well as needs of other users in the private sector and civil society. A General Synthesis draws on the technical volumes to answer a series of core questions posed at the start of the Assessment.

II. Assessment Process

4. The MA was governed by a Board, which was established to represent key "users" of the findings of the MA. The Board includes representatives of the CBD, UNCCD, Ramsar, and the UNCMS; some national governments; some UN agencies; civil society practitioners (including indigenous peoples); and the private sector. In addition, 10 "at-large" members were selected by the Board at its first meeting.

5. In addition to the Assessment at the global level, 33 sub-global assessments were approved and undertaken by other organizations and individuals, and contributed to the global syntheses. It should be noted that several of these were undertaken within the LAC region.

III. Main Findings of the global Millennium Ecosystem Assessment (MA)

6. At the heart of the Assessment is a stark warning that human actions are depleting Earth's natural capital, putting such strain on the environment that the ability of the planet's ecosystems to sustain future generations can no longer be taken for granted. At the same time, the assessment shows that with appropriate actions, it is possible to reverse the degradation of many ecosystem services over the next 50 years, but the changes in policy and practice required are substantial, and are not currently underway. The Assessments main findings can be summarized as follows:

- a) 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, fiber and fuel. This has resulted in a substantial and largely irreversible loss in the diversity of life on Earth;
- b) 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;
- c) 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
- d) the challenge of reversing the degradation of ecosystems while meeting increasing demands for services can be partially met under some scenarios considered by the MA, but will involve significant changes in policies, institutions and practices that are not currently under way. Many options exist to conserve or enhance specific ecosystem services in ways that reduce negative trade-offs or that provide positive synergies with other ecosystem services.

IV. The Importance of the MA Findings

7. The MA, like the Inter-Governmental Panel for Global Climate Change (IPCC), assesses current knowledge, scientific literature, and data. Thus the Assessment synthesises information that has been available, and does not undertake new research. However, three aspects of the MA do represent important new contributions:

- a) first, the findings of this assessment are the consensus view of the largest body of social and natural scientists ever assembled to assess knowledge in this area. Like the IPCC, the availability of this broad consensus view of scientists is an important "value added" part of the process and an important

contribution to decision-makers. The assessment identifies where broad consensus exists on findings but also where the information is insufficient to reach firm conclusions;

- b) second, the focus of this assessment on ecosystem services and their link to human well-being and development is unique. By examining the environment through the framework of ecosystem services, it becomes much easier to identify how changes in ecosystems influence human well-being and to provide information in a form that decision-makers can weigh alongside other social and economic information. The MA framework of ecosystem services and links to human well-being is already being adopted by other institutions and incorporated into other processes. It contributes to evolution of a more rigorous decision framework within which policy-makers could make decisions about the uses of natural systems and resources;
- d) third, the assessment identified a number of 'emergent' findings, conclusions that can only be reached when a large body of existing information is examined together. Four of these stand out:
 - i. **The balance sheet.** Although individual ecosystem services have been assessed previously, the finding that 60% of a group of 24 ecosystem services examined by the MA are being degraded is the first comprehensive audit of the status of Earth's natural capital.
 - ii. **Nonlinear changes.** Nonlinear (accelerating or abrupt) changes have been previously identified by a number of individual studies of ecosystems. The MA is the first assessment to conclude that ecosystem changes are increasing the likelihood of nonlinear changes in ecosystems and the first to note the important consequences of this finding for human well-being. Examples of such changes include disease emergence, abrupt alterations in water quality, the creation of "dead zones" in coastal waters, the collapse of fisheries, and shifts in regional climate.
 - iii. **Drylands.** Because the assessment focuses on the linkages between ecosystems and human well-being, a somewhat different set of priorities emerge from it. While the MA does confirm that major problems exist with tropical forests and coral reefs, from the standpoint of linkages between ecosystems and people, the most significant challenges involve dryland ecosystems. These ecosystems are particularly fragile, but they are also the places where human population is growing most rapidly, biological productivity is least, and poverty is highest.
 - iv. **Nutrient loading.** The MA confirms the emphasis that decision-makers are already giving to addressing important drivers of ecosystem change such as climate change and habitat loss. But the MA finds that excessive nutrient loading of ecosystems is one of the major drivers today and will grow significantly worse in the coming decades unless action is taken. The issue of excessive nutrient loading,

although well studied, is not yet receiving significant policy attention in many countries or internationally.

V. Relationship with other International Assessments

8. There are several similar international assessments, all in connection with the UN System. These include, *inter alia*, the Global Environmental Outlook (GEO), the Global International Waters Assessment (GIWA) and the IPCC. Both the MA and GEO are integral parts of the environmental assessment activities undertaken by the United Nations Environmental Programme (UNEP).

9. The MA serves a role similar to IPCC – it is designed to respond to the needs of a particular user audience (the ecosystem-related Conventions) on a particular set of environmental issues; it is intended to provide a summary of the “state of the science” for that audience. In contrast, GEO reports every five years on all aspects of the environment to a broad audience. Just as GEO would turn to the IPCC reports for the “state of the science” on climate, GEO is expected to be able to use the MA findings as a means of enhancing the information that it is available to report on ecosystem-related issues.

VI. The Caribbean Sea Sub-global Assessment (CARSEA)

10. An assessment of the Caribbean Sea as an ecosystem has been undertaken as one of the sub-global assessments within the framework of the MA. It has involved many organizations and individuals from the wider Caribbean. It has sought to provide scientific baseline data and analysis in support of the region’s efforts to promote the needs of the Caribbean Sea, as reflected in the efforts of the Association of Caribbean States within the United Nations General Assembly.

11. The Caribbean Sea comprises the territorial waters of 33 island and littoral states, nine of which are mainland South and Central American states. Colonial powers from North America and Europe (France and the Netherlands) are also important actors in the Caribbean Sea by virtue of their Caribbean territories. These, as well as Japan and Korea, also have economic interests in the Caribbean Sea. Thus the Caribbean Sea is used and impacted by many states and their economic activities/interests. These geo-political and economic interests have complex implications for policy and management of the Caribbean Sea.

12. The Caribbean Sea marine eco-region is the second largest sea in the world covering an area of approximately 2,648,000 km². The Caribbean Sea has also been critically assessed and ranked by expert consensus as having the highest priority for conservation of any marine eco-region in the whole of Latin America and the Caribbean (Sullivan Sealy and Bustamante 1999). The larger islands comprising the Greater Antilles have some physical features such as major mountain ranges, which are similar to the continent. The small islands of the Caribbean make up two ecologically distinct marine eco-regions referred to as the Lesser Antilles and Bahamian respectively. Inclusion of the Bahamian eco-region as part of the entire Caribbean Sea Large Marine ecosystem (LME) brings its area to about 3,273,830 km². Both of these island groups have very high percentages of endemic species, which are endangered and have been accorded global priority for conservation purposes (Meyers et al 2000).

13. Caribbean Sea states are highly dependent on its ecosystem services to support human well-being. The economies, marine environment and well-being of the peoples of the Caribbean are interdependent to the extent that country economies are heavily dependent on tourism and fisheries, and the majority of the people live in coastal settlements. Core ecosystem services critical to human well-being in the Caribbean are cultural, spiritual and recreational amenity value, which make it a desirable place to live and to visit. Islands in the region are especially dependent on the environment for income since Tourism revenue ranges from 15—99% of exports. Ecosystem services from Agriculture and Fisheries are also important to them ranging from 4—44% of GDP.

14. Many international organizations are actively engaged in developing, funding, and implementing activities related to the Caribbean Sea. Some of these are: United Nations Environment Programme (UNEP), United Nations Development Programme (UNDP), United Nations Economic Commission for Latin America and the Caribbean (UNECLAC), The Nature Conservancy (TNC), World Bank (IBRD), and The Organization of American States (OAS)]; bi-lateral donor agencies such as the International Development Research Centre of Canada (IDRC), and the Canadian International Development Agency (CIDA)]; and regional inter-governmental organizations such as the Association of Caribbean States (ACS) and the Caribbean Community (CARICOM).

15. These activities are uncoordinated, they take place without any holistic integrated management plan, and are initiated and pursued without effective governance arrangements. Moreover, there appears to be a mismatch of managerial arrangements with the scale of important problems related to over-fishing, pollution and sustainable tourism. Management is organized primarily along the lines of individual countries or political blocs (e.g. CARICOM) for what are essentially ecosystem-scale marine environmental problems.

16. The Heads of State and/or Government of the Members States of the Association of Caribbean States (ACS) have initiated a process within the United Nations General Assembly to have the Caribbean Sea designated as a ***Special Area in the context of Sustainable Development***. This proposal is being pursued through the work programmes of both the ACS and the Economic Commission for Latin America and the Caribbean (ECLAC) Sub-regional Headquarters for the Caribbean, and an integral part of this proposal is the implementation of UN Resolution (A/RES/57/261 'Promoting an Integrated Management Approach to the Caribbean Sea Area in the context of Sustainable Development'), approved by the 57th Session of the UN General Assembly. The ACS Summit of July 2005 held in Panama instructed the ACS Ministerial Council to take up the matter of the Caribbean Sea as a permanent item on its agenda.

17. The Caribbean Sea Assessment (CARSEA) attempts to take into account the multiplicity of issues associated with the protection and management of this ecosystem, and is considered in the context of sustainable development. It gives priority to assessing the condition and trends in the Tourism and Fisheries sectors of Caribbean Sea states.

18. Tourism: Data from the World Tourism and Travel Council show that relative to its size, the Caribbean scores highest in several key categories when its

dependence on tourism is ranked on a global scale compared with other regions. Thus the Caribbean may be the most dependent region in the world on tourism for jobs and income. In 2003 the Caribbean's travel and tourism economy accounted directly and indirectly for: (i) 1,857,000 jobs representing 12.0 % of total employment, (ii) US\$ 23.1 billion of GDP equivalent to 13.0% of total GDP, (iii) US\$ 16.2 billion of exports services and merchandise or 16.5% of total exports, (iv) US\$ 7.6 billion of capital investment or 22.3% of total investment.

19. Fisheries: In Central America and the insular Caribbean the number of people actively fishing increased from 194,278 in the 1970's to 504,913 in the 1990's. Per capita annual consumption of fish in the region is approximately 15 kg but is highest in the insular States where the average per capita consumption is 19 kg, which is well above the world average. The export value of fish and fisheries products increased from US\$ 400.6 million in 1976 to US \$1.6 billion in 2000. The US market is the major destination of most exports from the Caribbean. Export products are dominated by high-value commodities such as shrimp, spiny lobster, tunas, snappers and groupers, and queen conch, which command premium prices on the international market. There have been major fluctuations in fish catches since the 1980's and a change in trophic structure of the Caribbean Sea ecosystem.

20. Draft findings of the Caribbean Sea Assessment will be presented at the meeting of the Forum in "Agenda Item 6. Emerging themes on the international environmental agenda".

