



**Governing Council  
of the United Nations  
Environment Programme**

Distr.: General  
15 December 2008

English only



**Twenty-fifth session of the Governing Council/  
Global Ministerial Environment Forum**

Nairobi, 16–20 February 2009

Item 4 (a) of the provisional agenda\*

**Policy issues: State of the environment  
Twenty-fifth session of the Governing Council/**

**Overview of the environmental assessment landscape at the global  
and regional levels**

**Note by the Executive Director**

*Summary*

The annex to the present note contains an overview of the environmental assessment landscape at the global and regional levels and provides additional detailed information on matters referred to in document UNEP/GC.25/4/Add.1. It has been reproduced as received, without formal editing.

\* UNEP/GC/25/1.

## Annex

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## 1. Introduction

1. This report presents an overview of the global assessment landscape and highlight elements of best practice with respect to the future undertaking of major assessments. It includes an analysis of existing and ongoing sub-regional and regional assessments from a multi-thematic perspective.

### 1.1 What is an assessment?

2. **An assessment process brings together diverse strands of knowledge in a way that is useful for decision making.** Assessment is a key mechanism for strengthening the relationship between science and policy, and is a crucial practice through which science informs decision making. “It can establish the importance of an issue, provide an authoritative resolution of policy-relevant scientific questions, demonstrate the benefits of policy options, identify new research directions and provide technical solutions” (NAS 2007, p. 1). It can also demonstrate the risks and costs of different policy options.
3. There are many different types of assessments, as explained below. However, assessment processes share many important features irrespective of topic or discipline, making it possible to draw generalizations about how to ensure that an assessment has influence. To understand the influence that an assessment might have, it is critical to assess the *process* that produced it, and how it is linked to decision-makers (Farrell and Jäger 2005, NAS 2007). This report follows Clark and others (2006) in considering “influence” to be much broader than the ability of an assessment to lead to policy and behavioural changes. An assessment can influence the goals, interests, beliefs, strategies and resources of interested parties and can lead to institutional change and to changes in the discourse about the issue being assessed.

### 1.2 Typology of assessments

4. Four types of assessments are (NAS 2007):
  - **Process assessments**, which summarize and synthesize scientific knowledge of global change processes;
  - **Impact assessments**, which attempt to characterize, diagnose and project the risks or impacts of environmental change on people, communities, economic sectors, ecosystems and valued natural resources;
  - **Response assessments**, which identify and evaluate potential responses that could reduce human contributions or vulnerabilities to environmental changes;
  - **Integrated assessments**, which examine the links among the systems analyzed in process, impact and response assessments.
5. Most of the assessments discussed in this report are “integrated assessments”; they look at processes leading to change, impacts of and responses to change. They differ according to aspects such as geographical scope, issues covered and, most significantly, in the way that they are organized and governed. Box 1 illustrates these differences for four recent assessment processes at the global level. These assessments are discussed in more detail later in the report.

#### Box 1: Four recent integrated assessment processes at the global level

**The Millennium Ecosystem Assessment (MA)** was an integrated assessment of the consequences of ecosystem change for human well-being and the scientific basis for action needed to enhance the conservation and sustainable use of those systems and their contribution to human well-being. The assessment was called for by the United Nations Secretary-General Kofi Annan in 2000 and initiated in 2001. It involved the work of more than 1,360 experts worldwide. Their findings, contained in five technical volumes and six synthesis reports, provide a state-of-the-art scientific appraisal of the condition and trends in the world’s ecosystems and the services they provide (such as clean water, food, forest products, flood control, and natural resources) and the options to restore, conserve or enhance the sustainable use of ecosystems.

A Board was established to represent key "users" of the findings of the MA. The Board includes representatives of the CBD, CCD, Ramsar, and the UN Convention on Migratory Species (UNCMS); national governments; UN agencies; civil society representatives (including indigenous peoples); and the private sector. Board members representing institutions were selected by those institutions. In addition, 10 "at-large" members were selected by the Steering Committee and an additional 10 members were chosen by the Board at its first meeting. Other members were also selected by the Board to ensure appropriate geographical and sectoral distribution among Board members.

The main results of the MA were released in 2005.

**The Global Environment Outlook (GEO)**, requested by the Governing Council of UNEP, who are the prime target audience, is a consultative, participatory, capacity building process for global environmental assessment and reporting on the state of the environment, trends and future outlooks. GEO-4, the latest in UNEP's series of flagship reports assesses the current state of the atmosphere, land, water and biodiversity with a global and regional perspective, describes changes since 1987, and identifies priorities for action. It was prepared by about 390 experts and reviewed by more than 1000 others across the world. A global network of institutional partners supported the assessment process.

GEO-4 was written by teams of experts. The scope was approved by a multi-stakeholder consultation including governmental representatives. A second global intergovernmental and multi-stakeholder consultation was held at the end of the process to approve the Summary for Decision makers. A High-level Consultative Group of fifteen individuals from policy, science, business and civil society backgrounds was established to provide strategic guidance on various issues including the intergovernmental component of the GEO process. Regional consultations with stakeholders were carried out in the scoping and review stages of the GEO-4 assessment. GEO-4 was released in October 2007.

**The International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD)** was an international effort to evaluate the relevance, quality and effectiveness of agricultural knowledge, science, and technology (AKST); and effectiveness of public and private sector policies as well as institutional arrangements in relation to AKST.

The IAASTD is composed of one Global Assessment and five Sub-global Assessments, all using the same basic framework: the impacts of AKST on hunger, poverty, nutrition, human health, and environmental and social sustainability in relation to both the past and the future.

The process brought together governments; Non-governmental Organizations (NGOs); the private sector; producers; consumers; the scientific community; Multilateral Environment Agreements (MEAs) as well as multiple international agencies involved in the agricultural and rural development sectors to share views and gain common understanding and vision for the future. It was an intergovernmental process with a multi-stakeholder Bureau comprised of 30 representatives from government and 30 from civil society. The assessment was co-sponsored by FAO, GEF, UNDP, UNEP, UNESCO, World Bank, and WHO. The IAASTD was released in 2008.

**The Intergovernmental Panel on Climate Change (IPCC)** was established by UNEP and WMO in 1988 to provide decision-makers and others interested in climate change with an objective source of information about climate change. Its role is to assess the latest scientific, technical and socio-economic literature produced worldwide relevant to the understanding of the risk of human-induced climate change, its observed and projected impacts and options for adaptation and mitigation. The IPCC has currently 3 Working Groups and the Task Force on National Greenhouse Gas Inventories. The Working Groups and the Task Force have clearly defined mandates as agreed by the Panel and their activities are guided by two Co-chairs each. They are assisted by a Technical Support Unit and the Working Group or Task Force Bureau. Working Group 1 deals with "The Physical Science Basis of Climate Change", Working Group 2 with "Climate Change Impact, Adaptation and Vulnerability" and Working Group 3 with "Mitigation of Climate Change". In addition to the Working Groups and Task Force, further Task Groups and Steering Groups may be established for a limited or longer duration to consider a specific topic or question.

The Panel meets approximately once a year at the plenary level of Government representatives. These Sessions are attended by hundreds of officials and experts from relevant ministries, agencies and research institutions from member countries and from participating organizations. Major decisions such as the election of the IPCC Chair, IPCC Bureau and the Task Force Bureau, the structure and mandate of IPCC Working Groups and Task Forces, as well as on procedural matters, work-plan and budget are taken by the Panel in plenary Session. The Panel decides also on scope and outline of IPCC reports and accepts the reports. The IPCC Secretariat, which is located at WMO headquarters, plans, oversees and manages all IPCC activities. The fourth assessment report of IPCC was published in 2007.

### 1.3 Other Relevant Definitions of Environmental Assessments Processes

6. The generic typology of the US National Academy of Sciences presented above is useful for classifying assessments. It can be used, *inter alia*, to classify the numerous assessment processes used at a number of geographical scales. Some of the most common processes are:

#### Integrated Environmental Assessment

7. The interdisciplinary and social process, linking knowledge and action in public policy/decision contexts, and aimed at identification, analysis and appraisal of all relevant natural and human processes and their interactions which determine both the current and future state of environmental quality, and resources, on appropriate spatial and temporal scales, thus facilitating the framing and implementation of policies and strategies (Terminology source: <http://glossary.eea.europa.eu>). By definition these are “integrated assessments” and examples are given in Box 1 (e.g. GEO-4, IPCC).

#### Integrated Ecosystem Assessment

8. Integrated Ecosystem Assessment is a formal synthesis and quantitative analysis of existing information on relevant natural and socio-economic factors in relation to specified ecosystem management objectives. It uses quantitative analyses and ecosystem modelling to integrate a range of social, economic and natural science data and information to assess the condition of the ecosystem. They also identify potential management options and these are evaluated against management goals. They differ from other assessments like Environmental Impact Assessments in that they explicitly consider all components of the ecosystem and address the broad ecosystem management goals. (Definition source: <http://ocean.tamu.edu/GCOOS/Office/documents/Nov2007/04b.pdf>). By definition these are “integrated assessments” and examples include the Millennium Ecosystem Assessment (Box 1) and for the marine environment the Large Marine Ecosystem assessment processes.

#### Environmental Impact Assessment

9. Environmental Impact Assessment covers the analysis and judgement of the effects upon the environment, both temporary and permanent, of a significant development or project. It must also consider the social consequences and alternative actions. In the European Union, for example, as a result of directive 85/337/EEC (as amended 1997), this is now a legislative procedure to be applied to the assessment of the environmental effects of certain public and private projects which are likely to have significant effects on the environment. (Source: <http://www.eionet.europa.eu>).
10. Environmental impact assessment is a procedure that ensures that the environmental implications of decisions are taken into account before the decisions are made. The process involves an analysis of the likely effects on the environment, recording those effects in a report, undertaking a public consultation exercise on the report, taking into account the comments and the report when making the final decision and informing the public about that decision afterwards.
11. The Convention on Environmental Impact Assessment in a Transboundary Context is a UNECE convention signed in Espoo, Finland, in 1991 that entered into force in 1997. The Convention sets out the obligations of Parties -- that is States that have agreed to be bound by the Convention -- to carry out an environmental impact assessment of certain activities at an early stage of planning. It also lays down the general obligation of States to notify and consult each other on all major projects under consideration that are likely to have a significant adverse environmental impact across boundaries. By definition these are “impact assessments” and examples include “Environmental impact assessment of irrigation and drainage projects” (<http://www.fao.org/docrep/v8350e/v8350e00.htm>).

#### Strategic Environmental Assessment

12. This is a similar technique to environmental impact assessment (EIA) but normally applied to policies, plans, programmes and groups of projects. Strategic environmental assessment (SEA) provides the potential opportunity to avoid the preparation and implementation of inappropriate plans, programmes and projects and assists in the identification and evaluation of project alternatives and identification of cumulative effects. SEA comprises two main types: sectoral SEA (applied when many new projects fall within one sector) and regional SEA (applied when broad economic development is planned within one region (Source: <http://glossary.eea.europa.eu>).

13. According to the terminology introduced above, these are “impact assessments” and examples include international case studies of SEA for transport that were assembled as part of a UNECE international workshop in 2001.

#### Rapid Environmental Assessment

14. A rapid environmental assessment is carried out immediately after a disaster or conflict in order to assess the extent of damage to ecosystems and the environment and to identify urgent environmental risks. The aim is to ensure that the environment is fully integrated in the subsequent reconstruction and development agenda.
15. According to the terminology introduced above, these are “impact assessments” and examples include UNEP’s Rapid Environmental Assessment after the tsunami ([http://www.unep.org/tsunami/tsunami\\_rpt.asp](http://www.unep.org/tsunami/tsunami_rpt.asp)) and the assessment after the chemical spills into the Tisza river (<http://www.grid.unep.ch/product/publication/download/tisza.pdf>) (FEAT) applied by the United Nations Disaster Assessment and Coordination (UNDAC). An example published this year is the Democratic Republic Of Congo Earthquake In The Great Lakes Region.

#### Post-Conflict and Post-Disaster Assessment

16. The Post-Conflict & Disaster Management Branch (PCDMB) extends UNEP's work in areas of the world where the environment is impacted by conflicts and disasters, or where the environment is a factor contributing to conflicts and disaster impacts. The PCDMB has worked in post-conflict settings such as Afghanistan, Sudan, Iraq and Lebanon, as well as in countries affected by major disasters such as Pakistan, Indonesia, Sri Lanka and Maldives and has published eighteen environmental assessment reports between 1995 and 2008.
17. Field-based assessments are conducted to identify the impacts of a conflict or disaster on environmental systems and the possible indirect impacts on human health. To ensure scientific rigour, the fieldwork is followed by independent laboratory analysis. The resultant reports give detailed recommendations on environmental recovery, risk reduction and national capacity-building.
18. These assessments are generally “impact assessments” but can also be “integrated assessments” and include the post-conflict assessment for Iraq (<http://postconflict.unep.ch/publications/Iraq.pdf>).

### ***1.4 Criteria for analysing the influence of assessments***

19. The influence of an assessment on the actors and institutions involved in the issues and the related debate ultimately depends on a number of factors. There are three attributes, however, that make it more likely that the knowledge contained in an assessment will have influence: *relevance*, *credibility* and *legitimacy*. Ignoring any of these characteristics altogether has been shown to result in assessments that have no influence (e.g., Farrell and Jäger 2005).
20. **Relevance** (also referred to as **salience** in the literature that deals with design of assessment processes) is intended to reflect the ability of an assessment and its findings to address the particular concerns of a user. An assessment is relevant if the user is aware of it and if it informs his/her policy, behavioral or other decisions.
21. The relevance of the assessment product is enhanced if its analysis and findings are closely related to the needs and timing of identified decision-making processes and if they provide reliable means to help policy-makers set priorities. Its degree of spatial (regional, sub-regional) and/or sectoral specificity must be tailored for the relevant decision-making processes and for those undertaking or managing the activities covered in the assessment. Assessments may present a general overview or an in-depth investigation, but the appropriate level of detail should be worked out in advance. Thus the *process* must identify key target audiences (policy-makers, managers and sectoral users, public and media) in the planning stages and ensure effective consultation and communication with them throughout the process so that final products are meaningful for each audience. The process also determines how to engage decision-makers in dialogue over its findings and recommendations while ensuring an appropriate “boundary” between the experts and decision-makers. Capacity-building can make the scientific community more sensitive to the needs and concerns of the broader society enhance the ability of decision-makers to act on scientific information and expand the informed audience for assessments (NAS 2007).

22. **Legitimacy** is a measure of the political acceptability or perceived fairness of an assessment. A lack of legitimacy is evident, for instance, when one group questions the product or process of an assessment because it feels that its input was not considered, or when some nations believe that data sources or modeling approaches were dominated by experts from other regions.
23. The legitimacy of the assessment is established if all interested parties are satisfied that their concerns and contributions were taken into account, if the process has been conducted in a transparent manner and if assessment products are widely available. It also depends on balance in considering different groups' concerns. It is the *process* which establishes the modalities for interested parties to contribute to the design of an assessment in the planning stages and to air their concerns throughout the process. The process must also agree on clearly-articulated responsibilities for those who participate, and provide for balance among the experts. It must ensure that agreed procedures are transparent and that they are followed. If the process includes efforts to strengthen the capacity of all interested groups to participate, this also enhances legitimacy.
24. **Credibility** refers to the perceived scientific and technical soundness of an assessment. Even if an assessment captures the attention of relevant audiences, its influence still depends on whether, and which, audiences consider the knowledge assembled to be valid.
25. The credibility of the assessment is reflected especially in the use of quality data and established analytical methods and models. It requires that the range of expertise and interpretational perspectives brought to bear in the assessment is adequate and that information and findings are treated as objectively as possible. In addition, the expert community will judge credibility according to whether issues of particular significance from a scientific perspective have been included, and whether data and information used in the assessment are accessible and clearly explained, so that they can be used to verify assessment findings. The credibility of the assessment process depends on its procedures for selection of experts, quality assurance, peer review and treatment of dissenting views and uncertainty. For a credible process, it is essential that experts participate in their independent capacity and that there are agreed means to avoid potential bias. If the assessment is conducted under the auspices of or endorsed by a reputable institution, this can also enhance its credibility. Capacity-building plays an important role in strengthening quality and thus credibility over time.
26. It is important to distinguish clearly credibility and legitimacy. Both concern the level of trust people are willing to place in an assessment. The difference is that credibility largely concerns trust by scientific experts based on the means they use to evaluate other scientific work, while legitimacy concerns trust among interested parties generally, who judge an assessment process in the same way they judge other aspects of governance: based on its fairness, transparency and balance in representation (NAS 2007).

### ***1.5 Overview of this report***

27. Section 2 describes existing global environmental assessments in terms of their scope and coverage as well as some characteristics that are important in determining relevance, credibility and legitimacy. Section 3 discusses the scope of assessments at the regional and sub-regional level. Section 4 discusses elements of best practice for global-scale assessments derived from the analysis of assessment processes. The final section draws some conclusions based on the analysis of the global, regional and sub-regional landscape. It highlights gaps and overlaps and the importance of assessment design.

## **2. The Global Assessment Landscape**

### ***2.1 The global assessments considered in this report***

28. The list of assessments considered here is presented in Box 2. More details about each assessment can be found in Annex 1. More detailed information on the status of the environment world-wide can also be found in recent atlases and books. These are, however, not classified as assessments based on the definition given above. Without question, these products have or can have an influence on decision-making and serve to increase awareness of environmental issues. For example, *The World's Protected Areas: Status, Values and Prospects in the 21st Century* (Chape et al., 2008) offers a comprehensive and authoritative status report on the world's 100,000 parks, nature reserves, and other land and marine areas currently designated as protected areas. Similarly, UNEP's atlas, *One Planet Many People*, has raised awareness through a combination of ground photographs, current and historical satellite images, and narrative based on extensive scientific evidence, illustrating how humans have altered their

surroundings and continue to make observable and measurable changes to the global environment (<http://na.unep.net/OnePlanetManyPeople/>).

### **Box 2: Global Assessments related to the environment**

International Assessment of Agricultural Knowledge Science and Technology for Development

Assessment of Assessments (of the marine environment)

Global Environment Outlook

Group of Experts on the Scientific Aspects of Marine Environmental Pollution

Global International Waters Assessment

Global Biodiversity Assessment

Global Biodiversity Outlook

Global Forest Resource Assessment

Intergovernmental Panel on Climate Change

Land Degradation Assessment in Drylands

Millennium Ecosystem Assessment

OECD Environment Outlook

Ozone Assessments

State of the World Fisheries and Aquaculture

United Nations Committee on the Effects of Atomic Radiation

World Resources Report

World Water Development Report

## **2.2 Coverage**

29. By definition all of the assessments covered in this section are global in scope, although there are variations in how detailed or extensive the global coverage is and how much regional or sub-regional information is included.
30. At the global level there is considerable overlap concerning the issues that are covered in assessments. This is not surprising given the interlinkages in the Earth System (see GEO-4, Chapter 8). Some assessment processes, such as the Intergovernmental Panel on Climate Change (IPCC), the stratospheric ozone assessments, the World Water Development Report or the State of the World Fisheries and Aquaculture cover one issue in particular, although even here there are acknowledged linkages between issues. Other assessments, such as GEO and the OECD Environment Outlook, examine a range of issues and the links between them.
31. A considerable number of the assessments look at biodiversity or aspects of it. While the Global Biodiversity Assessment and the Global Biodiversity Outlook assess biodiversity for all systems, the Global Forest Resource Assessment and the State of the World Fisheries and Aquaculture, for example, look at the biological diversity in parts of the system. The Millennium Ecosystem Assessment and the most recent World Resources Reports linked the issues of ecosystem health and human well-being.
32. Not all assessment processes treat socio-economic issues in depth. While the IPCC, for example, has paid increasing attention to the costs and benefits of mitigation and adaptation, other assessments have focussed more on the environmental state and trends. Social and economic conditions are quite poorly assessed globally relative to marine activities and the status of the marine environment, even in those regions where extensive assessment

information is available on the status and trends within the natural environment. In some cases, economic information has been collected but is either not easily available or not analysed with respect to coastal and marine areas. It appears that the connections between agencies working with social and economic data and analyses and those assessing marine ecosystems are weak at best and non-existent in too many cases.

33. Not all assessment approaches consider potential future developments using scenarios. However, those assessments that have used scenarios (e.g. IPCC, GEO, OECD Environmental Outlook, Millennium Ecosystem Assessment) show the value of scenarios for exploring possible future developments, for integrating natural and social science approaches and for policy analysis.
34. In 1998 the report by UNEP, NASA and the World Bank (Protecting our Planet, Securing our Future: Linkages Among Global Environmental Issues and Human Needs) called for “a more integrative assessment process for selected scientific issues, a process that can highlight the linkages between questions relevant to climate, biodiversity, desertification, and forest issues”. The Millennium Ecosystem Assessment and, building upon that, GEO-4 attempted to respond to this need. The challenges of a rapidly changing and complex world demand integrated approaches (integrating driving forces from all sectors, pressures on all aspects of the environment, changes in all of the aspects and their impacts, as well as the response options).

### 2.3 Participation

35. Participation in global assessment processes is extremely varied. The nature of the processes ranges from a formal inter-governmental organization with agreed procedures as found in the IPCC and stratospheric ozone assessments to mixed processes such as the Millennium Ecosystem Assessment and agency-driven processes such as the World Forest Resource Assessment. IGO assessments vary from those undertaken through a formalized inter-agency process (e.g. GESAMP) to those undertaken as “in-house” assessments and reports under the auspices of one or more organizations with less formal rules and procedures (e.g. World Resources Report).
36. As a result of the different organizational structures, participation also varies widely. In intergovernmental processes experts are usually nominated by governments. Not all assessment processes provide a transparent description of participation issues (i.e. who can participate, in what way, at what stage of the process), while others have detailed terms of reference.
37. There are varying practices regarding the different ways in which non-governmental stakeholders may be involved in an assessment process. In some cases, because they participate as observer organizations in the inter-governmental body calling for the assessment, they can influence decisions regarding the design and conduct of assessments and how to respond to assessment findings (e.g. in GEO-4, non-governmental representatives were invited to the multi-stakeholder and intergovernmental consultations at the beginning, middle and end of the process).
38. The participation of the private sector in assessment processes is rarely described. The participation of the private sector in the Ozone Assessments is well documented<sup>1</sup>. Some participation processes at the global level are organized to make a particular link to local and indigenous concerns (e.g. GBO-3).

### 2.4 Defining objectives and scope

39. The different organizational structures of assessment processes clearly influence how the objectives and scope of assessments are defined. For intergovernmental processes, it is usually an intergovernmental meeting that defines objectives and scope, as shown for example by the IPCC. At the other end of the spectrum, expert-driven assessments usually have no formal process for deciding on scope and objectives. In the middle of the spectrum, agency-driven assessments (e.g. World Forest Assessment Process, state of the World Fisheries and Agriculture), the agency determines scope and objectives. The latter can inhibit the carrying out of “integrated” assessments, since the agencies operate within well-defined spheres. A middle ground is found in processes like GEO-4, in which experts together with a multi-stakeholder and intergovernmental *consultation* jointly agree on the scope and objectives (within the mandate of UNEP).

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<sup>1</sup> Parson (2003), Page 260, notes with regard to the Technology and Economics Assessment Panel (TEAP) of the Ozone Assessments that “...TEAP succeeded in engaging a critical mass of top technical experts from the firms, research institutes and other organizations with the most current and relevant expertise”

## ***2.5 Peer Review***

40. Not all assessment processes provide easily accessible information on who takes part in nominating the pool of experts from which to draw for assessments and peer review or who takes part in the peer review. Again, because of the varying organizational structures there is a range of practices. Intergovernmental processes, such as the IPCC, have both expert review and government review. The IAASTD documents its “principles and procedures” publicly. Some processes also organize “review meetings” (e.g. the ozone science assessment panel). Many processes mention the tens to hundreds of experts that have reviewed the assessment. Clearly peer-review is seen as an important mechanism for ensuring the perceived credibility of the assessment. Other processes, e.g. IPCC, Millennium Ecosystem Assessment, IAASTD, GEO-4 also include “review editors”, who check the responses of the authors to all review comments, which is a further step in ensuring credibility and to some extent the legitimacy of the process (ensuring that all comments have been appropriately taken into account).

## ***2.6 Availability of reports and data***

41. The global assessment processes all produce printed reports and in general these are downloadable from the internet. The intergovernmental processes translate the reports and/or the summaries into the UN official languages. Some of the web-sites include a considerable amount of other information, including media releases, video material etc. For the ozone assessments it has become customary to add a set of questions and answers – mainly for non-expert readers – to the executive summary. The availability of the underlying data and metadata is much less widespread. For the GEO-4 process the GEO data portal is a source of much of the data used in the assessment, GBO-3 also plans a web-based data portal, and the World Resources Institute also maintains a data portal backing up the World Resources Report. In some cases, data are not made available (e.g. fisheries data) because of underlying concerns about industry competitiveness, although ways have been found to circumvent this problem. If the data are not readily available the credibility of the assessment can be easily challenged.

## ***2.7 Sources of knowledge***

42. Most of the assessment processes are based on expert input. This includes the use of peer-reviewed publications (e.g. IPCC, GEO-4) but also responses to questionnaires (e.g. Forest Resources Assessments). Some assessment processes refer to a broader sourcing of knowledge. For example, the Millennium Ecosystem Assessment synthesized information from the scientific literature and relevant peer-reviewed datasets and models but it also incorporated knowledge held by the private sector, practitioners, local communities, and indigenous peoples. The assessment of land degradation in drylands mentions participatory rural appraisals, expert assessment, remote sensing, modelling, and local knowledge. The IAASTD integrated local and traditional knowledge.

## ***2.8 Review and evaluation of the effectiveness of the assessment process***

43. A fundamental consideration in making assessments influential is periodic review and evaluation so that improvements can be incorporated into future assessments. While there is anecdotal evidence of some assessment processes considering past experience before embarking on a next round for only a few of the global assessment processes are there documented evaluations. GESAMP was evaluated in 2001 and restructured thereafter. GEO 2000, GEO-3 and GEO-4 were evaluated. The Global International Waters Assessment was evaluated ([http://www.unep.org/eou/Reports/Environmental\\_Assesment/GIWAsummary.asp](http://www.unep.org/eou/Reports/Environmental_Assesment/GIWAsummary.asp)) and the Millennium Ecosystem Assessment was also evaluated ([http://www.unep.org/eou/Reports/Environmental\\_Assesment/MEAsummary.asp](http://www.unep.org/eou/Reports/Environmental_Assesment/MEAsummary.asp)). Both of the latter evaluations were carried out on behalf of UNEP and present excellent examples of external post-assessment evaluations that provide detailed information on lessons learned and recommendations for similar and/or related activities in the future.

# **3. Regional/Sub-regional Assessments**

## ***3.1 Introduction***

44. This section considers the assessments carried out at the regional level. The national level is considered in a separate report (Please see information document UNEP/GC.25/INF/12/Add.1 for an overview of national assessment and reporting). Many regional assessments do not document the process followed to produce the assessments, so no attempt is made here to analyse the processes. However, the elements of best practice outlines in the previous section apply equally to regional processes. However, it is important to note that it is potentially

easier to secure robust “knowledge to action” linkages at the regional level than at the global level, because of the clearer delineation of relevant decision-making authorities at this level.

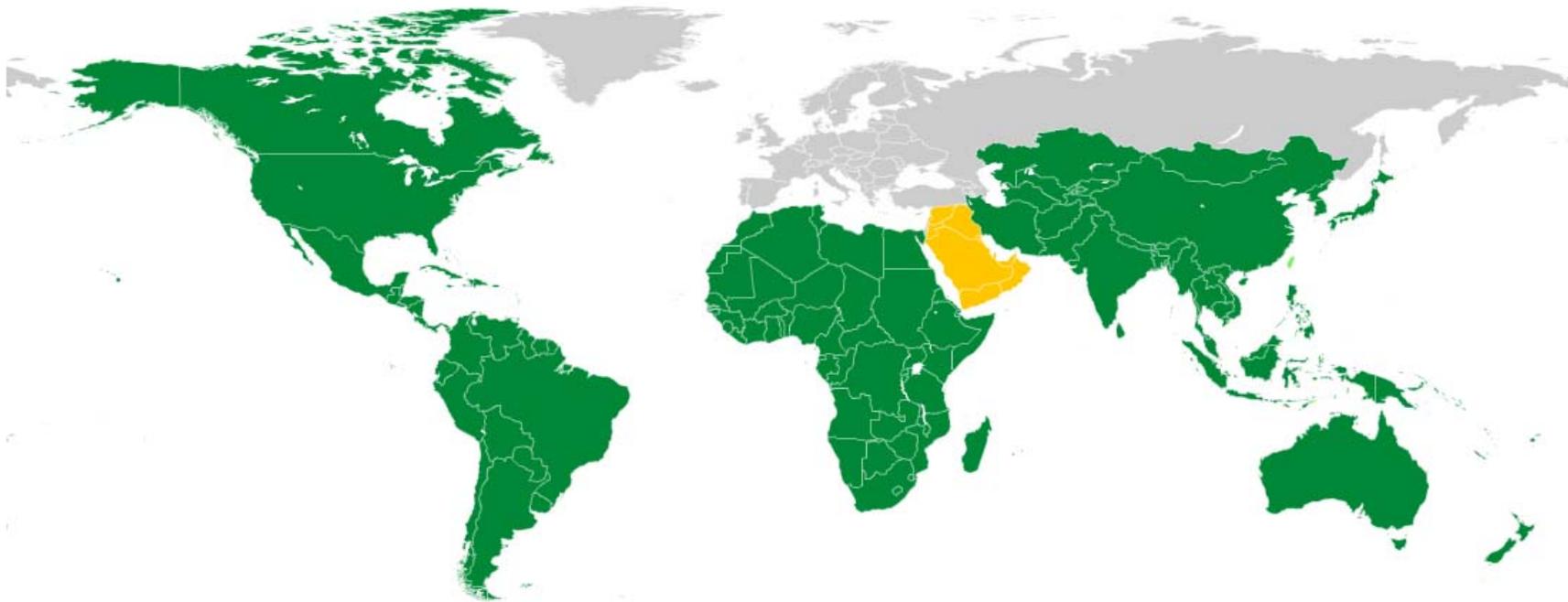
### ***3.2 Regional assessments linked to global assessment process***

**Global Environment Outlook** ([www.unep.org/geo](http://www.unep.org/geo))

45. Several GEO assessments have been carried out at the regional level using a process similar to that used at the global level:
- Africa Environment Outlook (2002)
  - Africa Environment Outlook 2 (2006)
  - Asia Pacific Environment Outlook 2 (2001)
  - Latin America and the Caribbean GEO-LAC (2003) and GEO LAC (2000)
  - North America’s Environment (2002)

Fig 1 below illustrates the geographical coverage where GEO regional assessments have been conducted or are planned.

**Fig1: GEO Regional Assessments Undertaken<sup>2</sup>**



Key					
	GEO Regional Assessments Undertaken		GEO Regional Assessment planned		Pan-European Assessments conducted by EEA

<sup>2</sup> Reporting on the State of Environment in the pan-European context has been undertaken by the European Environment Agency under the framework of UN Economic Commission for Europe “Environment for Europe” process (See Box 8 for further details)

46. At the sub-regional level there is a considerable number of assessments using the GEO process and these are listed for each region in section 3.4. The regional assessments are published online as well as being available for purchase in printed form. The websites generally contain a wealth of other information. For example, the African Environment Outlook page also includes fact sheets, press releases, and multimedia products (video news release, posters and PowerPoint presentation).
47. The GEO reports cover both the state of the environment and the socio-economic drivers of change. Most of them include an outlook component and all of them discuss policy opportunities. They are produced through a participatory integrated assessment process and UNEP has supported the development of Training Manuals to support carrying out GEO-like processes at the regional and sub-regional level.

**Global International Waters Assessment (<http://www.unep.org/dewa/giwa/>)**

48. The Global International Waters Assessment considered 9 major regions and 66 sub-regions. Assessment reports were published for 31 sub-regions as listed in Table 1.

**Table 1: GIWA (sub-) regional assessment reports**

Russian Arctic	Gulf of California/Colorado River Basin	Benguela Current
Arctic Greenland, East and West Greenland Ice shelf	Sea of Okhotsk	Indian Ocean Islands
Caribbean Sea a	Oyashio Current	East African Rift Valley Lakes
Caribbean Sea b and c	Yellow Sea	South China Sea
Caribbean islands	East China Sea	Mekong River
Barents Sea	Patagonian Shelf	Sulu-Celebes (Sulawesi) Sea
Faroe Plateau	Brazil Current	Indonesian Seas
Baltic Sea	Amazon Basin	Pacific Islands
Caspian Sea	Canary Current	Humboldt Current
Aral Sea	Guinea Current	
Eastern Equatorial Pacific	Lake Chad Basin	

49. These assessment reports include the assessment itself together with a causal chain analysis and a discussion of policy options. The causal chain analysis was used to identify and better understand the linkages between perceived problems and their societal root causes. The analysis considered five major problem areas of concern for the aquatic environment: Freshwater shortage; pollution; habitat and community modification; unsustainable exploitation of fisheries and other living resources; and global change. The web-site includes detailed information on the methodology, scaling issues and the regional breakdown used in the assessments.

**Millennium Ecosystem Assessment (<http://www.millenniumassessment.org/en/Multiscale.aspx>)**

50. The Millennium Ecosystem Assessment (MA) sub-global assessments were designed to meet needs of decision-makers at the scale at which they are undertaken, strengthen the global findings with on-the-ground reality, and strengthen the local findings with global perspectives, data, and models. There were 18 MA-approved sub-global assessments and an additional set with an associated status (see Table 2 below). The MA pointed out that assessments at sub-global scales are needed because ecosystems are highly differentiated in space and time, and because sound management requires careful local planning and action. Local assessments alone are insufficient, however, because some processes are global, and because local goods, services, matter, and energy are often transferred across regions.
51. The MA Sub-Global Working Group, comprised of all the MA sub-global assessments, produced a sub-global assessment, published in 2005. This report is both a synthesis of the findings of the various sub-global assessments and a resource on the lessons learned through the process on multi-scale assessment methodologies, cross-scale interactions, and the incorporation of traditional and local knowledge into a scientific assessment process.

**Table 2: Millennium Ecosystem Assessment Sub-Global Assessments**

Approved Assessments	Associated Assessments
Altai-Sayan	Arab Region
Alternatives to Slash-and-Burn	Arafura and Timor Seas
Canada (Coastal British Columbia)	Australia (Northern Australia Floodplains)
Caribbean Sea	Argentina (Pampas)
Chile (Atacama)	Brazil (São Paulo Greenbelt)
China (Western)	Central Asia Mountain Ecosystems
Costa Rica (Chirripó)	China (Great Rivers)
India (Local Villages)	Colombia (Andean Coffee-Growing Region)
Norway (Glomma River Basin)	Egypt (Sinai)
Papua New Guinea	Fiji
Peru (Vilcanota)	Great Asian Mountains (GAMA)
Philippines (Laguna Lake Basin)	Himalayas (Eastern)
Portugal	Indonesia (Jakarta Bay and Bunaken)
Southern Africa (SAfMA)	India (Urban)
Sweden (Kristianstad)	Himalayas (Hindu-Kush)
Sweden (Stockholm Urban)	Trade, Poverty & Environment
Trinidad	United States (Alaska)
Vietnam	United States (Wisconsin)

**Fig 2: Map of the Millennium Ecosystem Assessment Sub-Global Assessments**

52. The map of the location of the MA sub-global assessments shows the uneven spread of the areas assessed. Further information on these sites is available on the web-site with links to publications and descriptions of the issues covered.

#### **International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD)**

[http://www.agassessment.org/index.cfm?Page=About\\_IAASTD&ItemID=2](http://www.agassessment.org/index.cfm?Page=About_IAASTD&ItemID=2)

53. The IAASTD was a three-year collaborative effort (2005 - 2007) that assessed agricultural knowledge, science and technology (AKST) in relation to meeting development and sustainability goals of:
- Reducing hunger and poverty
  - Improving nutrition, health and rural livelihoods
  - Facilitating social and environmental sustainability
54. The IAASTD was composed of one Global Assessment and five Sub-global Assessments, which used the same basic framework as the Global Assessment, i.e., the impacts of AKST on hunger, poverty, nutrition, human health, and environmental and social sustainability in relation to both the past and the future. The five Sub-global Assessments were:

- Central and West Asia and North Africa (CWANA) - Regional Institute: ICARDA (International Center for Agricultural Research in the Dry Areas)
- East and South Asia and the Pacific (ESAP) - Regional Institute: World Fish Center
- Latin America and the Caribbean (LAC) - Regional Institute: IICA (Inter-American Institute for Cooperation on Agriculture)
- North America and Europe (NAE)
- Sub-Saharan Africa (SSA) - Regional Institute: ACTS (African Centre for Technology Studies)
- Summaries for decision-makers for each of the five sub-global assessments are available on the IAASTD website.

### 3.3 Regional Marine Assessments

55. The currently ongoing work on the Assessment of Assessments (AoA) of the marine environment has looked at a wide range of assessments. The information on these assessments has been entered into the GRAMED database created by the World Conservation Monitoring Centre (<http://www.unep-wcmc.org/gramed/>). The GRAMED database contains information on 448 activities at present, including assessments, scientific research studies and data holdings of relevance to the marine and coastal environment at the national, regional and supra-regional scale. It allows the user to search the assessments, download reports of searches, access online full text reports, and where available data sets and other products.
56. From this database, the “narrow” and “broad” regional assessments for the marine environment are given in tables in Annex 2. The analysis of the marine assessments is still being carried out by the AoA Group of Experts. However, early drafts of this work suggest that while assessment capabilities are strong in many regions, there is a clear need for continued efforts to develop greater expertise around the globe in the technical aspects of marine environmental assessment work. In addition, there are three major areas that need immediate, concerted and ongoing attention:
- ensuring that assessment processes are well designed, focused and conducted to the highest standards,
  - improving data access and interoperability so that assessment analyses can be extend and integrated with and across regions, and
  - developing integrated ecosystem assessments that can inform on the state of systems rather than just individual sectors.

### 3.4 Other Regional Assessment Processes

#### Africa

57. In Africa, in addition to the Africa Environment Outlook process described above there is a range of assessments produced under the auspices of UN agencies (primarily FAO and UNEP) and described by the United Nations Systems Wide Earthwatch (<http://earthwatch.unep.net>). These are listed in the Box 3 below and cover assessments of forests, water, mangroves and chemical pollution. Box 4 describes a regional assessment for the Zambesi Basin, which covers a wide range of environmental and socio-economic issues as well as an outlook section.

#### **Box 3: MAJOR ASSESSMENTS REPORTED BY THE UNITED NATIONS SYSTEMS WIDE EARTHWATCH - AFRICA**

##### **Forestry Outlook study for Africa (2003)**

Undertaken by FAO in partnership with the countries and institutions concerned about forests and forestry in the region.

##### **Sustainable Management of Tropical Forests in Central Africa In Search of Excellence (2003)**

Highlights the numerous efforts undertaken in forest management in Central Africa within the past 20 years, FAO, within the framework of the FAO/Netherlands Partnership Programme and in close collaboration with regional and international organizations, launched an initiative entitled “In search of excellence” to identify and document successful examples of sustainable management of Central African forests.

##### **Africa's lakes: Atlas of Our Changing Environment (2006)**

This atlas vividly illustrates some of the changes people and nature have brought about on Africa's lakes -both good and bad- over the last decades and presents an overview analysis of Africa's lakes situation.

**Africa Environment Outlook, Case studies: Human Vulnerability to Environmental Change (2004)**

A follow up to 2003's African Environment Outlook (AEO), these case studies are designed to stimulate interest and action in similar situations at national, sub-regional and regional levels.

**Western Indian Environment Outlook (1999)**

This report provides an overview of the state of the environment focusing on the Lome countries of the Western Indian Ocean – the Federal Islamic Republic of Comoros, Madagascar, Mauritius and Seychelles – followed by a review of current policy responses including multilateral environmental agreements and regional and national policy initiatives already undertaken in the region. A concluding chapter looks at the future and emerging issues.

**Mangroves of East Africa (2003)**

This publication provides a concise account of the available information and current issues facing mangroves in East African countries. It comprises a regional summary of the factors and activities that affect mangroves across East Africa, and a series of reports that focus on South Africa, Mozambique, Madagascar, Tanzania, the Seychelles, Kenya and Somalia.

**Regionally Based Assessment of Persistent Toxic Substances: Sub-Saharan Africa**

**Box 4:** The **State of the Environment in the Zambezi Basin 2000**<sup>3</sup> marks the first time that an assessment of a single ecosystem has been undertaken and reported upon in southern Africa. The assessment looks at the shared natural resources of the basin, taking into account ecological, social and economic issues. Draining a total basin area of over 1.32 million square kilometres, stretching across eight member states - Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia and Zimbabwe - the Zambezi Basin constitutes one of Africa's most important natural resources. It is an important habitat as far as biodiversity is concerned. The report was published simultaneously in English and Portuguese. The issues covered include:

- an overview of the people and issues in the Zambezi Basin;
- the physical features and climate;
- water and wetland resources;
- biological resources and diversity;
- agriculture;
- industry;
- energy issues;
- tourism;
- pollution;
- poverty issues;
- gender issues;
- regional cooperation;
- trends and scenarios.

The report was prepared as part of the ongoing Communicating the Environment Programme (CEP) of the Southern Africa Research and Documentation Centre. While the original CEP partnership involved the SADC Environment and Land Management Sector (ELMS), the World Conservation Union Regional Office for Southern Africa (IUCN-ROSA), and the Southern African Research and Documentation Centre-Musokotwane Environment Resource Centre for Southern Africa (SARDC-IMERCSA), two new regional institutions (SADC Water Sector Coordination Unit (WSCU) and the Zambezi River Authority (ZRA)) were involved as full partners in the preparation of this report. The funding partner was the Swedish International Development Cooperation Agency (Sida).

3 <http://www.sardc.net/imercsa/zambezi/zambezi2000/summary/index.html>

## Asia

58. In Asia, in addition to the Asia Pacific Environment Outlook process described above there is a range of assessments produced under the auspices of UN agencies (primarily FAO and UNEP) and described by the United Nations Systems Wide Earthwatch (<http://earthwatch.unep.net>). These are listed in the Box 5 below. There are several traditional State of the Environment reports at the regional level in Asia, as well as assessments of forests, water and atmospheric pollution. There is also one post-disaster assessment. There are numerous intergovernmental organisations operating in the Asia-Pacific region, such as ASEAN (Association for Southeast Asian Nations), SAARC (South Asian Association for Regional Cooperation) and SACEP (South Asian Cooperative Environment Program) but while these organisations all include “the environment” as one of their areas of interest, apart from SACEP they are not active in mandating assessment activities.

### **Box 5: MAJOR ASSESSMENTS REPORTED BY THE UNITED NATIONS SYSTEMS WIDE EARTHWATCH – ASIA AND THE PACIFIC**

#### **Greater Mekong Subregion (GMS) Atlas of the Environment (2004)**

The subregion is made up of Cambodia, Yunnan Province of the People's Republic of China, the Lao People's Democratic Republic, Myanmar, Thailand, and Viet Nam. They are linked together by the longest river in Southeast Asia, the Mekong.

#### **People, forest and trees in West and Central Asia, Outlook for 2020 (2007)**

This publication provides a long-term perspective of changes in the forest sector. Implemented in partnership with the countries, the study covered 23 countries in West Asia, Central Asia and the southern caucasus. This report outlines the probable developments, including broader regional and global issues.

#### **Forestry Outlook for Asia-Pacific (1998)**

The APFSOS study attempted to draw together the myriad of forestry dimensions to provide a coherent description and analysis of the situation and prospects for forestry in the region.

#### **State of the Environment in Asia and the Pacific -2000**

The State of the Environment in Asia and the Pacific 2000 is the fourth in a series of reports published every five years on environmental trends in the region.

#### **After the Tsunami: UNEP's Rapid Environmental Assessment Report (2005)**

This report is based on surveys by UNEP teams in the field working with other UN agencies, governments and non governmental organizations in the affected Tsunami regions. It looks at how the regions affected are rebuilding and how future tragedy can be avoided.

#### **The Asian Brown Cloud: Climate and other Environmental Impacts (2002)**

This seven-year study by 200 scientists indicates that the "Asian Brown Cloud" reduces the amount of solar radiation reaching the ground, leading to a drop in crop productivity, as well as trapping heat, altering rainfall and causing deadly respiratory diseases.

#### **South Asia: State of the Environment 2001**

The report was prepared through a consultative and participatory process soliciting input from various government agencies, NGOs, and intergovernmental organizations.

#### **Pacific Islands Environment Outlook 2005 (and 1999)**

The Pacific Environment Outlook was prepared simultaneously with the Pacific Regional Assessment on Sustainable Development to feed into the Barbados + 10 process and ensure consistency of much of the reporting.

#### **Reefs at Risk in Southeast Asia (2002)**

This publication provides a detailed analysis of threats to coral reefs across Southeast Asia. The goal of the project is to raise awareness about human pressure on coral reefs and to provide resource managers with specific information and tools to manage coastal habitats more effectively. The project was implemented in collaboration with twenty partner institutions in the region.

## Latin America and the Caribbean

59. In addition to the GEO assessments described earlier, the assessments in the Latin American and Caribbean region (Box 6) include sub-regional environmental outlooks, assessments on the issue of climate change, assessments for youth, a health assessment and an assessment for international waters and two assessments by UNEP's Chemicals Division. A range of assessments on the marine environment in this region are currently being analysed by the AoA Group of Experts, such as the Caribbean Sea Ecosystem Assessment, An Atlas of Sea Turtle Nesting Habitat for the Wider Caribbean Region, and Reefs at Risk in the Caribbean.

### **Box 6: REGIONAL ENVIRONMENTAL ASSESSMENTS – LATIN AMERICA AND THE CARIBBEAN**

#### **Climate Change in the Caribbean and the Challenge of Adaptation (2008)**

The report produced by UNEP and CARICOM highlights climate change trends and climate variability, the impact they have on Caribbean Small Island Developing States (SIDS) in particular, and the efforts in responding to these issues.

#### **GEO for Youth in the Caribbean (2008)**

Through an internet discussion group and various meetings Caribbean youth have had the opportunity to share their experiences about environmental projects and to prepare an environmental assessment for the Caribbean. The final report of the GEO for Youth in the Caribbean was launched during the week of 30th October to 3rd November in St. Georges, Grenada. Through the report, young people of the Caribbean voice their concerns toward environmental damage and rapid change. It also conveys youthful vision and recommendations for what must be done, proposing strategies for sustainable development.

#### **Hydropolitical vulnerability and resilience along international waters – Latin America and the Caribbean (2007)**

Comprehensive assessment of the hydro political vulnerabilities and resilience of LAC's international waters, including detailed information on existing and forthcoming cooperative agreements to develop more sustainable resilience and informed policies at regional and sub-regional levels.

#### **GEO Mercosur (2008)**

Joint production by the Sub-Working Group 6 of Environment (SGT -6) of the Southern Common Market (MERCOSUR) and Centro Latinoamericano de Ecología Social (CLAES), a Uruguay-based NGO. The report analyzes the environment and the development of five South American countries (Argentina, Brazil, Chile, Paraguay and Uruguay) with the total territorial extension of 12 millions km<sup>2</sup>, and with the population of more than 250 millions. The assessment has employed the UNEP's GEO methodology as base, with a special focus on Environment and Trade, a major concern for MERCOSUR countries.

#### **GEO for Health (December 2008)**

GEO Health project intend to develop a methodological approach to preparing Integrated Assessments on environment and health problems in LAC was motivated by the objectives set forth by the Health and Environment Ministers of the Americas (HEMA). This initiative became the responsibility of UNEP and the Pan-American Health Organization (PAHO), with the technical collaboration of the Oswaldo Cruz Foundation (FIOCRUZ), the participation of scientific and technical institutions, some governments and some experts of the Region, as well as the financial support of the Canadian and Norway governments.

#### **Caribbean Environmental Outlook (1999)**

Provides information on the state of the environment in the Caribbean, help identify regional environmental concerns and highlight policy priorities.

#### **Caribbean Environment Outlook 2005**

The Caribbean Environment Outlook assesses the state of the environment in the Caribbean SIDS and Low-Lying Coastal States.

#### **GEO Youth Central America (GEO Juvenil Centroamericano) (2005)**

Produced by Central America youth to express their views in regards to the state of the environment in the region, based on the GEO for Youth methodology.

#### **El Cambio Climático en América Latina y el Caribe (2004)**

Assesses the situation in Latin America and the Caribbean in relation to climate change.

**GEO Centroamerica (GEO Central America): Perspectivas del medio ambiente 2004**

Published in 2005, using the GEO conceptual framework the report presents a territorially integrated analysis of the natural components of the Central America landscape, where environmental components like water, land, biodiversity, atmosphere interact..

**Andean Environmental Outlook (2003)**

This report assesses the state of the environment, problems and trends in the Andean region. It covers land, forests, biodiversity, freshwater, marine and coastal resources, urban areas and natural and man-made disasters.

**Perspectivas de la biodiversidad en Central America (Biodiversity perspectives in Central America) 2003**

Joint production of the University of Costa Rica, UNEP, and the Central America Commission for the Environment (CCA). The report presents a regional analysis of biodiversity using an ecosystem-based approach.

**Regionally Based Assessment of Persistent Toxic Substances****Eastern and Western South America (2002)**

This report presents data and analysis on Persistent Toxic Substances (PTS) for the eastern and western South America region (Argentina, Bolivia, Brazil, Chile, Ecuador, Paraguay, Peru and Uruguay).

**Regionally Based Assessment of Persistent Toxic Substances****Central America and Caribbean (2002)**

The report identifies major regional sources of PTS; summarizes the evidence on their impact on environment and on human health; assesses their transboundary transport; explores the sources of PTS-related problems; evaluates the regional capacity for the containment and abatement of PTS; identifies regional priorities for PTS-related environmental and health issues; and contributes to the identification of global priorities related to PTS.

**State of the Environment and Natural Resources in Central America (1998)**

Central American Commission for Environment / Development (CCAD)

**West Asia**

60. For West Asia only a small number of assessment activities are reported (see Box 7) and the first GEO-like assessment for the region will be published in 2009. Two of the assessments listed in the box are concerned with water, the major environmental issue of the region, while a third assessment was prepared for the World Summit on Sustainable Development in 2002. One of the sub-global assessments for the Millennium Ecosystem Assessment is for the Arab Region (see above).
61. For the marine area, several regional assessments have been examined by the AoA Group of Experts. In particular, the role of The Organization for the Protection of the Marine Environment (ROPME), an inter-governmental organization that conducts regular assessments in the region, has been highlighted. ROPME Sea Area (RSA) includes Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates and part of the Arabian Sea LME. ROPME published its first *State of the Marine Environment Report (SOMER)* in 1999. It has since been updated in 2000 and 2003<sup>4</sup>. As decided by the ROPME Council, one of the major objectives of this report is to *suggest regional strategies and priority actions commensurate with these concerns and issues to enable governments and decision-makers to meet these challenges at the national level, as well as in the regional and global contexts*. The Arab region also contributes to some assessments of the Mediterranean.

<sup>4</sup> ROPME (2004). *State of the Marine Environment Report: ROPME Sea Area*. Regional Organization for the Protection of the Marine Environment, Safat, Kuwait, 217 pp

**Box 7: ENVIRONMENTAL ASSESSMENTS – WEST ASIA****ENVIRONMENT OUTLOOK FOR THE ARAB REGION (EOAR)**

The First Comprehensive Policy-Relevant Environmental Assessment Report for the Arab Region is under preparation to be launched in the Spring of 2009. The EOAR report process started at the request of the Council of Arab Ministers Responsible for the Environment (CAMRE) in a resolution adopted at its 17th Session, held at the headquarters of the League of Arab States (LAS) in December 2005 in Cairo, Egypt. The resolution invited UNEP to prepare an Arab Environment Outlook in collaboration with Arab Specialized Organizations and GEO Collaborating Centers in the Region.

<http://www.unep.org/dewa/westasia/eoar/>

**ARAB ENVIRONMENT: FUTURE CHALLENGES**

An independent report published by the Arab Forum for Environment and Development (AFED), which is a not-for-profit regional non-governmental organization, grouping experts together with the civil society, business community and media, to promote prudent environmental policies and programmes across the Arab region. The report is a collection of essays on sectoral and thematic environmental themes and issues in the Arab region. It does not provide a coherent analysis based on integrated environmental assessment. The report was launched on 26 October 2008:

<http://www.afedonline.org/afedreport/>

**THE ENVIRONMENT IN THE TRANSBOUNDARY CONTEXT IN THE ESCWA REGION: SITUATION AND RECOMMENDATIONS (2005)**

This study focuses on the current state of shared resources and the problems confronting them. Issues covered include water, coastal and marine environments, dumping at sea, unsustainable fishing practices, pollution from oil spillages and discharges of land-based effluents, as well as habitat destruction caused by land-filling, reclamation and dredging.

**ASSESSMENT OF LEGAL ASPECTS OF THE MANAGEMENT OF SHARED WATER RESOURCES IN THE ESCWA REGION (2001)**

The Economic and Social Commission for Western Asia has undertaken several activities to enhance the capacity of its member States to manage their shared surface and groundwater resources and strengthen their cooperation to achieve sustainable development and utilization of these resources.

**WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT ASSESSMENT REPORT FOR THE ESCWA REGION (2002)**

The report reviews past achievements and future challenges in moving towards sustainable development in the ESCWA region. It concludes with a platform of priorities for action and means of implementation for achieving progress towards sustainable development over the coming years.

**North America**

62. In addition to the indicators-based report “North America’s Environment” published in 2002, the Earthwatch list of major assessments lists only two other North American assessments:
63. Children's Health and the environment in North America (2006);  
Regionally based assessment of persistent toxic substances – North America (2003).
64. The Commission for Environmental Cooperation assesses the North American environment. The latest assessment, *The North American Mosaic: An Overview of Key Environmental Issues*, is a follow-up to the CEC’s 2002 state of the environment report and responds to the CEC Secretariat’s obligation to periodically address environmental conditions in Canada, Mexico and the United States. With the advice of environmental reporting experts from the three countries, the report draws on information from national and international sources for a broad overview of North America’s environment. The report addresses issues related to air and atmosphere, biodiversity and ecosystems, pollutants, and water. Specific topics include climate change, species of concern—including the critically endangered vaquita porpoise—and the quality and quantity of water shared between the North American nations.  
<http://www.cec.org/news/details/index.cfm?varlan=english&ID=2799>

65. North America participates in a range of assessment processes for the ocean areas surrounding it, including, for example ICES (International Council for the Exploration of the Sea). Thus many of the regional marine assessments listed in Annex 2 have North American participation. In addition, North America participates in Arctic assessments.

## Europe

66. The European Environment Agency (<http://www.eea.europa.eu/>) produces a wide range of assessments (see a list of recent broad assessments in Box 8). In addition to the “Europe’s Environment” series, the fourth of which was published in 2007 with planning for the fifth assessment now ongoing, there are surveys of environmental trends and other state and outlook reports. In addition there are narrower assessments on issues such as forests, climate change or sectors, such as transport.
67. In addition, there is a wide range of assessments listed by Earthwatch (Box 9) and produced by OSCE, UNECE, WHO, FAO and UNEP Chemicals. The oceans surrounding Europe are also covered by regional assessment processes, listed in Annex 2 and currently being analysed by the AoA Group of Experts.
68. One assessment process in Europe that deserves special mention is the process associated with the Convention on the Long-Range Transport of Air Pollution (LRTAP). The various assessments produced under the auspices of LRTAP have been studied in detail by various scholars in the Global Environmental Assessment project ([www.ksg.harvard.edu/gea](http://www.ksg.harvard.edu/gea)). In contrast to most other assessment processes, the LTRAP assessments do not produce regular reports but the close cooperation of the scientific experts and negotiators has led to an iterative process of assessment and policy development and implementation. For example, Eckley (1999)<sup>5</sup> has examined the common elements which participants found helpful in Persistent Organic Pollutants (POPs) assessment processes with those found helpful in previous LRTAP protocols, in order to determine whether there are common principles that emerge to explain the effectiveness common in both cases. This comparison identifies a few key elements, including the adaptability of the assessment process and the iterative nature of communication between scientists and policymakers. For example, where scientists and policymakers were able to communicate repeatedly about assessment procedures and outcomes, and where adaptability allowed policymakers to make science-based decisions on actions with confidence that they would be later revisited, scientific assessment processes were more effective across the different issues of sulfur and POPs.

### Box 8: A SELECTION OF MAJOR RECENT ASSESSMENT REPORTS FROM THE EUROPEAN ENVIRONMENT AGENCY

#### Europe's environment — The fourth assessment 2007

Evaluates progress, primarily against the objectives of the Sixth Environment Action Programme of the European Community and the Environment Strategy for Countries of Eastern Europe, Caucasus and Central Asia. The European Environment Agency has produced 4 assessment reports for the UNECE pan-European region which now covers 53 countries in all. The last one published in 2007 covered the EEA member countries (32 at the moment) as well as the following countries: Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia, Georgia, Kazakhstan, Kyrgyzstan, Montenegro, Republic of Moldova, Russian Federation, Serbia, Tajikistan, Ukraine and Uzbekistan

#### The European environment - State and outlook 2005

This is the third state and outlook report on the European environment produced by EEA (earlier reports 1995 and 1998). According to its founding regulation, the EEA is obliged to do a “State of the Environment and Outlook” (SOER) assessment report covering all EEA member countries every five years. The countries covered in 2005 were Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom. The next SOER is due in 2010. This will also include the 6 collaborating (Southeast Europe) countries which are: Albania, Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia, Montenegro and Serbia.

5 Eckley, Noelle. 1999. "Drawing Lessons About Science-Policy Institutions: Persistent Organic Pollutants (POPs) under the LRTAP Convention." *Belfer Center for Science and International Affairs (BCSIA) Discussion Paper E-99-11*. Cambridge, MA: Environment and Natural Resources Program, Kennedy School of Government, Harvard University.

Europe

**EEA Signals 2004: A European Environment Agency update on selected issues**

Survey of environmental trends in EEA member countries covering aspects of agriculture, water pollution, nature protection, packaging waste, energy, transport, air pollution and climate change. It also provides an environmental perspective on the economic and social situation in Europe, including trends in demography and resource use, in the context of progress towards sustainability (earlier reports 2002, 2001, and 2000).

**Europe's Environment: The Third Assessment 2003**

Prepared for the 'Environment for Europe' Ministerial Conference held under the auspices of the UN Economic Commission for Europe in Kiev, Ukraine on 21-23 May 2003.

**Impacts of Europe's changing climate - 2008 indicator-based assessment**

The report presents past and projected climate change and impacts in Europe by means of about 40 indicators and identifies sectors and regions most vulnerable with a high need for adaptation. The report covers the following indicator categories: atmosphere and climate, cryosphere, marine biodiversity and ecosystems, water quantity (including river floods and droughts), freshwater quality and biodiversity, terrestrial ecosystems and biodiversity, soil, agriculture and forestry, human health.

**European forests - ecosystem conditions and sustainable use (2008)**

Despite political commitment, Europe is struggling to halt the loss of biodiversity by 2010. Forests, as the hosts of much of the biological diversity in Europe, are vital to this debate. Any initiative designed to halt the biodiversity loss in Europe must take forests into account.

**Energy and environment report (2008)**

This report assesses the key drivers, environmental pressures and some impacts from the production and consumption of energy, taking into account the main objectives of the European policy on energy and environment including: security of supply, competitiveness, increased energy efficiency and renewable energy, and environmental sustainability. The report addresses six main policy questions and presents trends existing within the EU compared to other countries.

**Priority issues in the Mediterranean environment (2006)**

The report scans existing and emerging pollution issues, draws a picture at the regional level and provides an environmental profile for each of the Mediterranean countries

**Arctic environment: European perspectives (2004)**

The Arctic is one of the planet's last pristine areas where indigenous peoples pursue their traditional lifestyles. However, as Europe's dependence on the Arctic's resources grows, the region is coming under increasing pressure from unsustainable development, land fragmentation, climate change and pollution. EEA and UNEP have jointly prepared this report to raise awareness among policy makers and the public about the issues involved and why Europe should care.

**Box 9: MAJOR ASSESSMENTS REPORTED BY THE UNITED NATIONS SYSTEMS WIDE  
EARTHWATCH - EUROPE****Environment and Security: Transforming risks into cooperation "Central Asia - Ferghana / Osh / Khujamd area" (2005)**

This assessment has been produced upon the request of the countries of the Ferghana Valley – Kyrgyzstan, Tajikistan, and Uzbekistan – and has widely benefited from their inputs. It shows how the 'Environment and Security' initiative has helped identify both environmental threats to regional security and opportunities for cross-border dialogue.

**Environment and Security: Transforming Risks into Cooperation "The Case of the Southern Caucasus" (2005)**

This report—available in both Russian and English—presents through maps and graphics the linkages between environmental stress, potential social tension and areas of particular vulnerability in the Southern Caucasus, as identified by stakeholders from the countries.

**Environment and Security - Transforming risks into cooperation "The Case of Central Asia and South Eastern Europe" (2003)**

This report focuses on the environmental stress affecting security in two case regions, Central Asia and South Eastern Europe. It provides maps with an overview on major environmental risks to human development and security.

**Forest Condition in Europe: (2006)**

Forest condition in Europe has been monitored since 1986 by the International Co-operative Programme on the Assessment and Monitoring of Air Pollution Effects on Forests (ICP Forests) in close cooperation with the European Commission (EC). ICP Forests is working under the Convention on Long-range Transboundary Air Pollution (CLRTAP) under the United Nations Economic Commission for Europe (UNECE). Earlier reports (2002, 2003, 2004, 2005)

**European Forest Sector Outlook Study (2005)**

Presents long term trends for supply and demand of forest products (roundwood, sawnwood, panels, pulp, paper, non-wood products) and services and outlook to 2020, in western and eastern Europe and four major CIS countries, including Russia. It reviews trends for the forest resource, trade, markets and recycling.

**Assessment of Progress in Sustainable Development since Rio 1992 for Member States of the United Nations Economic Commission for Europe (2001)****Carpathians Environment Outlook (2007)**

The report is a sub-regional examination and synthesis of the environmental situation in the greater Carpathian region, that includes parts of eight countries (the Czech Republic, Hungary, Montenegro, Poland, Romania, Serbia, the Slovak Republic and Ukraine).

**Reducing Environment & Security Risks from Mining in South Eastern Europe (2004)**

Desk-assessment study for the Environment and Security Initiative Project. This study addressed mining activities in Albania, Bosnia and Herzegovina, Kosovo, the former Yugoslav Republic of Macedonia, and Serbia and Montenegro, and has identified and catalogued a large number of mineral resources related sites that can be of high hazard.

**Rapid Environmental Assessment of the Tisza River Basin (2004)****Freshwater in Europe - Facts, Figures and Maps (2004)**

This publication is an overview, through a set of graphics, maps and other illustrations, of the state of Freshwater in Europe and Central Asia.

**Caucasus Environment Outlook 2002**

This first Caucasus Environment Outlook (CEO) is a regional report and the result of work by experts from four countries: Armenia, Azerbaijan, Georgia and Russia.

**Regionally Based Assessment of Persistent Toxic Substances Europe (2003)****Regionally Based Assessment of Persistent Toxic Substances Mediterranean (2003)****Water and Health in Europe (2002)**

A Joint Report from the European Environment Agency and the WHO Regional Office for Europe.

**Climate Change and Stratospheric Ozone Depletion: Early Effects on our Health in Europe (2000)**

Assessment, based on currently available scientific knowledge, of the effects that climate change may have on the environment in Europe and the health of its populations.

**Freshwater and Tourism in the Mediterranean (2004)**

This report gives an overview of the current impact of tourism on freshwater resources and freshwater ecosystems and the underlying causes in the Mediterranean.

**Polar Regions**

69. Only one assessment (on persistent toxic substances) is reported for the Antarctic, however there are regional assessments of the marine areas surrounding this continent (see Annex 2). The assessments in the Arctic cover the issues of toxic substances, pollution and climate change, as well as the marine assessments currently being analysed by the AoA Group of Experts. The Arctic Climate Impact Assessment published in 2004 was an international project of the Arctic Council and the International Arctic Science Committee (IASC), to evaluate and synthesize knowledge on climate variability, climate change, and increased ultraviolet radiation and their consequences (<http://www.acia.uaf.edu/>). This project has been noted for developing a process that effectively incorporated indigenous knowledge.

**Box 10: MAJOR ASSESSMENTS REPORTED BY THE UNITED NATIONS SYSTEMS WIDE EARTHWATCH – POLAR REGIONS**

**Regionally Based Assessment of Persistent Toxic Substances Arctic. Regional Report (2003)**

This publication is produced within the framework of the Inter-Organization Programme for the Sound Management of Chemicals (IOMC). This publication is intended to serve as a guide to the Persistent Toxic Substances in the Arctic Region.

**Regionally Based Assessment of Persistent Toxic Substances Antarctica. Regional Report (2003)**

This publication is intended to serve as a guide to the Persistent Toxic Substances in the Antarctic Region.

**Arctic: pilot GLOBIO Report (2001)**

Due to rapid industrialization in northern wilderness new threat to wildlife, habitats and indigenous peoples the report reveals that up to 80 per cent of the Arctic will be affected by mining, oil and gas exploration, ports, roads and other developments by 2050 if the industrialization of one of the world's last wilderness areas continues at current rates

**Arctic Pollution (2006)**

The third AMAP State of the Arctic Environment Report (earlier reports 2002, 1997).

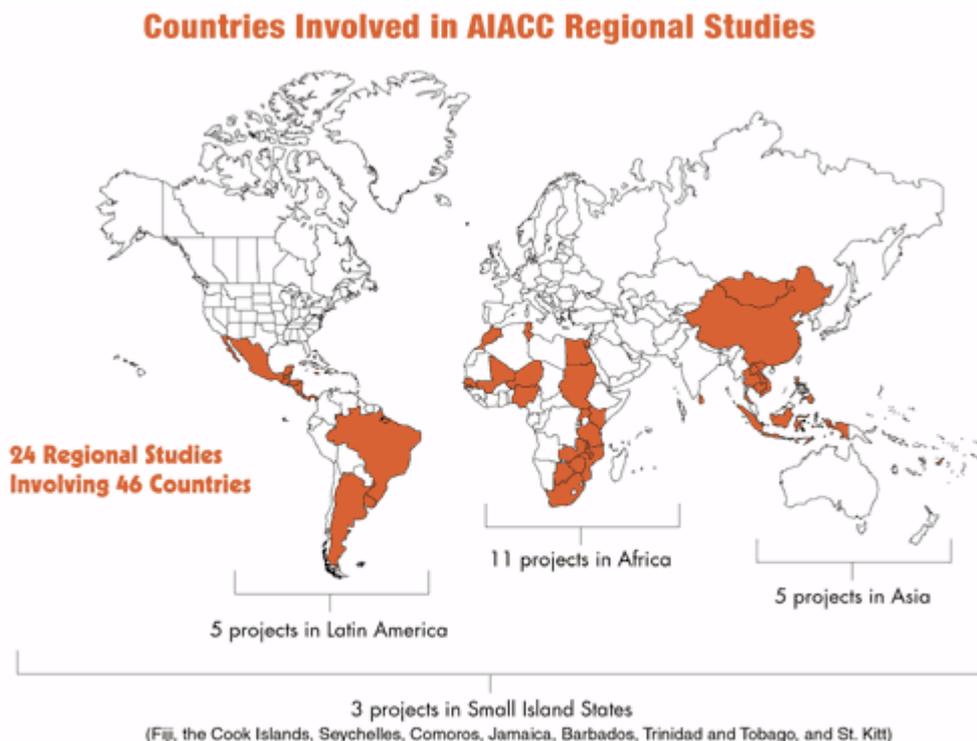
**Impacts of a warming Arctic: Arctic Climate Impact Assessment (ACIA) (2004)**

This assessment was prepared by an international team of over 300 scientists, other experts, and knowledgeable members of the indigenous communities. The report has been thoroughly researched, is fully referenced, and provides the first comprehensive evaluation of arctic climate change, changes in ultraviolet radiation, and their impacts for the region and for the world.

**Assessments of Impacts and Adaptations to Climate Change (AIACC)**

70. Assessments of Impacts and Adaptations to Climate Change (AIACC) is a global initiative developed in collaboration with the UNEP/WMO Intergovernmental Panel on Climate Change (IPCC), and funded by the Global Environment Facility to advance scientific understanding of climate change vulnerabilities and adaptation options in developing countries. AIACC is implemented by the United Nations Environment Programme (UNEP), and executed jointly by START and the Third World Academy of Sciences (TWAS).
71. The regional studies funded under the AIACC include evaluation of vulnerabilities and adaptation strategies, use of observed impacts of recent climate variability to understand present vulnerabilities, use of socioeconomic scenarios to investigate multiple and interacting future stresses, and engagement of stakeholders. The map below (Fig 3) shows the locations of the regional studies and Annex 3 includes a list of the reports of this project, which has also produced two books summarising the results ([http://www.aiaccproject.org/aiacc\\_studies/aiacc\\_studies.html](http://www.aiaccproject.org/aiacc_studies/aiacc_studies.html)).

Fig 3: Country Involved in AIACC Regional Studies



#### 4. Best Practice in Assessment Processes

72. This section contains elements of best practice. It is important to note that this is not a comprehensive list of all elements that should be taken into account for the design of a credible, relevant and legitimate process.
73. The following list of “design features” or issues to be considered in initiating and carrying out an assessment shows the range of activities that have to be carried out<sup>6</sup>. Some of these may be decided when an assessment process is established, such as the objectives of the overall process and an institutional arrangement for the process as a whole. Others would be addressed in planning for a particular assessment. In all cases, once it has been decided to undertake an assessment, its planning and design require careful consideration in order to ensure relevance, legitimacy and credibility.
- objectives (the essential first step to guide the process);
  - scope (geographic, temporal and thematic coverage), conceptual framework and outline, including key questions of interest to all stakeholders: these are often captured as formal “terms of reference” for an assessment;
  - target audience(s) for a particular assessment, including relevant policy making levels, inter-governmental bodies and the degree of specificity required;
  - a mechanism to guide the individual assessment, including composition and clearly-articulated responsibilities (e.g., steering committee, science panel);
  - identification of potential collaborating institutions and partners;
  - an implementation plan (schedule and deadlines for organization of work, drafting, review and production of reports) linked clearly with the budget;
  - a plan to realize linkages with other contemporary assessment processes for various themes (e.g., climate change, ozone depletion, river basins);
  - timing and nature of government involvement, including in the review process;
  - timing and modalities for participation by non-governmental stakeholders;
  - provision and procedures for quality assurance;
  - provision and procedures for peer review;
  - provision for sourcing of materials to be used in the assessment;

<sup>6</sup> This list was compiled during the Assessment of Assessments for the Marine Environment.

- procedures and criteria for selecting lead authors, contributing authors, peer reviewers and other experts;
- provision to protect the integrity of the assessment process from influence and bias (e.g., from funding or sponsoring entities);
- clear guidelines for treatment of dissenting views and uncertainty;
- analytical methods and tools to be used in the assessment;
- arrangements to catalogue/preserve/maintain data and information (reports, papers, graphics material, spatial data) for use in future assessments through availability of metadata, electronic databases and data and information management systems;
- arrangements for public availability of data, reports and other assessment products;
- provision to develop a communications and outreach strategy to cover the entire period of an assessment, including appropriate products for different target audiences;
- provision for post-assessment review and evaluation of assessment products and results and the assessment process itself.

74. Furthermore, it should be noted that the elements discussed below are often closely interrelated. For example, the design of the “science-policy interface” also affects decisions about participation of stakeholders; data availability and the communications strategy are also linked.

#### **4.1 Involvement of stakeholders**

75. The geographic and thematic scope of an assessment influence decisions about participation in the process. As a general matter, however, evaluations of assessment processes have concluded that when input is sought from those with a stake in the outcome, or when experts from these groups are directly engaged in assessments, they are more likely to reflect assessment findings in their decisions and in their work (van de Kerkhof 2006; van de Kerkhof and Wieczorek 2005). Careful consideration of which stakeholders and how to involve them is fundamentally important in planning an assessment. If participation is not well thought out, this may undermine its goals and potential value. The benefits of participation (Box 11) strengthen credibility, legitimacy and relevance and apply at all scales.

##### **Box 11: Benefits of Participation**

- fosters shared understanding about the objectives and process of an assessment;
- builds trust between governments and among all stakeholders;
- incorporates different disciplines and expertise and draws on a wide range of expert sources and schools of thought and opinion;
- promotes information sharing and networking, thus strengthening knowledge and capacity and potentially narrowing areas of disagreement;
- fosters agreement on criteria and methods to be employed in analysis, particularly to address areas of uncertainty;
- generates full and open discussion, sharpening conclusions and avoiding unsupported opinions;
- “engages” participants in the process (ownership), thus broadening interest in assessment findings and their implications, in an effective response and in the effectiveness of measures adopted;
- promotes a culture of responsibility among all participants;
- leads to wider awareness and distribution of findings through stakeholder networks.

76. Stakeholders can be involved in assessment in several ways and at different stages of the process. The organization [mechanism] responsible for establishing the assessment would normally be charged with providing for such participation. Bearing in mind the distinction between scientific credibility and legitimacy the following identifies participation by knowledgeable experts in the assessment itself as only one of several ways to involve stakeholders in the process. Stakeholders may:

- be asked to provide input regarding the objectives and scope of an assessment as well as organizational matters like the review process or selection criteria for experts. This allows them to help frame the issues and questions to be considered in the assessment process, to identify important target audiences, etc;
- nominate experts to a pool from which to draw for working groups and peer review;
- take part as experts knowledgeable in the data and information subject to assessment. In this respect, they can:
  - participate as experts in working groups, including as lead or contributing authors;
  - submit data and information for the assessment process (source materials);
  - participate as expert reviewers of assessment products;

- take part in an external review involving governments and other stakeholders, which supplements expert peer review;
- help communicate and evaluate the findings and implications of assessments, including how to respond to them, through conferences, workshops and other means;
- help shape and participate in a review or evaluation of the assessment process in order to improve future assessments.

77. Special arrangements may be necessary to ensure participation and contributions in an assessment process by holders of traditional or local knowledge. By supplementing scientific data and information, local expert knowledge can add quality to an assessment and improve its credibility and legitimacy in the eyes of traditional communities. It can also increase the relevance of an assessment by incorporating local knowledge, for example, about key issues, possible response options and their likely success. Traditional knowledge (TK) may be the *only* source of information in some cases, especially of historical knowledge, and in many cases it can serve to correct baselines established by more recent data collection activities.

#### **Best Practices**

- Clear agreement during the planning stages of an assessment on the stakeholders to be involved and how to involve them, including the option of participating as expert assessors;
- Balanced expert participation in the assessment itself;
- Documentation of how stakeholders were involved in the assessment report.

## ***4.2 The science/policy interface***

78. By definition an assessment is carried out at the interface between science and policy (or between “knowledge” and “action”). Since a primary role of assessment is to inform policy decisions, it is important to take into account the needs of policy-makers. In most assessment processes, especially those linked directly to decision making bodies, there is “boundary negotiation” between the science and policy communities (Cash and others 2003). For assessments that are not directly linked to “client” decision making processes, it is even more important to identify the key policies and the relevant decision making bodies that the assessment is intended to influence, as well as the priority given to the issues under consideration by the policy community and the general public. In addition to a *direct* link with decision making to enhance policy relevance, *regular* assessment supports adaptive management responsive to new scientific knowledge and other developments – the makings of an iterative assessment process.

79. The science/policy relationship makes it critical to maintain a clear distinction in assessments between the role of the scientific community, who serve in an expert capacity, so that judgments are based solely on scientific knowledge, and the role of governments responsible for policies and decision making. While the experts can evaluate options and their risks and likely outcomes, decisions about what risks to tolerate and how to manage them fall to the responsible decision making authorities. It is important that expert assessors be able to conduct their work without influence from governments or other sponsoring or funding institutions regarding the scientific content of the assessment. Once their work is completed, however, governments have a role in the review and acceptance of assessment products, especially to ensure the relevance of the assessment and the commitment of the policy community to take action.

For the design of the science/policy interface, several factors are especially important:

80. *Regular dialogue between policy-makers and those leading an assessment* throughout the process helps decision-makers shape their requests in recognition of what the scientists are able to deliver and helps ensure that as the assessment progresses it will meet their expectations. Once findings emerge, dialogue affords opportunities for policy-makers to fully understand them and clarify assumptions and uncertainties and their implications for policy decisions. It can also lead to a clear articulation of questions that require further analysis, which decision-makers can refer back to the expert body (Kimball 1996). For the experts, regular dialogue helps clarify how to characterize and present findings more effectively in the future
81. *Explicit terms of reference (TORs) as well as policy relevant questions*, agreed in the pre-assessment stage, define clearly the objectives and scope of an assessment and how it will respond to the needs of management authorities. It is important that these indicate the degree of specificity sought in the assessment in relation to particular sectors, impacts, response options and other matters.

82. *Guidance for policy-makers to set priorities* is a very important function of assessment, whether the assessment concentrates on a single sector, a particular environmental problem, or one or another ecosystem component or whether it covers the full range of pressures and impacts in the area of concern. Policy relevance is enhanced when an assessment explains fully the *relative* significance of different changes in environmental conditions – in both environmental and socio-economic terms. An integrated assessment provides a stronger basis for decision-makers to rank the severity of environmental problems and set priorities across sectors and ecosystem components. If it incorporates social and economic costs and benefits, including costs of degraded natural resources or environment (such as impacts on human health or food security, or reduced employment and revenue as tourism declines), it can provide additional guidance for decision-makers to establish priorities and evaluate trade-offs.
83. *Reaching each identified target audience* requires a clear understanding of which users, managers and specialized decision making authorities will be affected by an assessment. This is important not only to deliver a useful (relevant) message through targeted products and presentations but also to engage those affected so that they help develop and then support and apply the policy options chosen on the basis of an assessment (NAS 2007).

#### **Best Practices**

- develop and make publicly available explicit Terms of Reference for an assessment that define its objectives, scope and the key questions of interest to policy-makers and other target audiences, in consultation with these and other stakeholders;
- define the most important target audience(s) for each assessment at the outset, including relevant national authorities and inter-governmental decision making bodies and design products that are meaningful and useful for each at the appropriate geographic scale (NAS 2007);
- identify relevant networks of decision-makers, sectoral users and researchers who are most likely to use the assessment findings and seek their views;
- encourage those conducting the assessment to report the relative risk/threat posed by various pressures/activities and/or the relative vulnerability of various ecosystem/social components – whether the risk is assessed formally or not;
- encourage those conducting the assessment to highlight the risks posed by the information gaps (instead of only asking for the gaps to be reported);
- encourage assessments that cover costs and benefits of changes in ecosystem goods and services for human well-being;
- evaluate response options, including likely outcomes and the risks associated with each as well as the costs of inaction;
- incorporate smaller-scale and/or sectoral case studies into the design of a larger scale assessment to illustrate implications for specific decision making authorities or particular sectors;
- encourage those conducting the assessment to report the rationale for all findings and recommendations and to present scientific advice with all its associated assumptions, uncertainties and areas of disagreement.

### ***4.3 Effective communication***

84. **Effective communication** is an essential component of an assessment process, from the design stage through to presentation of results. Assessment can have varying levels of influence on the actors, institutions and debate, depending on **what** is communicated, **to whom**, **when** and **in what way**. During the process, the body requesting the assessment and relevant stakeholders should receive regular progress reports. A clear description of how the assessment was carried out and who was involved supports perceptions of credibility and legitimacy. Informative products targeted to each identified audience enhance the assessment's relevance and credibility (NAS 2007).

#### **Best Practices**

- provide for regular progress reports during the assessment to identified target audiences and a means for review and comment of draft documents by a broad audience (distinguishing peer review from broader external review);
- in the early stages of an assessment, develop a communications strategy for disseminating assessment results, bearing in mind, and in consultation with, each target audience;
- ensure that targeted policy-maker audiences receive special attention in the communications strategy;
- differentiate outputs, so that more detailed, technical material is pitched for the expert community, while a short and precise summary is available for high-level officials and easy-to-understand material is available for general audiences, etc;

- use charts, graphics and indicators judiciously for different audiences to capture the attention of important but less specialized constituencies while avoiding over-simplification for knowledgeable policy-makers, managers and users;
- use maps and spatial data to present information, both for public and specialized audiences;
- make a special effort to reach some identified target audiences ( e.g. indigenous communities, children);
- use a talented science writer to develop scientifically accurate products to reach a wider public audience and/or high-level officials.

#### 4.4 Data and information accessibility

85. It is important that assessments have recourse to all relevant information and rely on established methods of analysis. Conversely, over-reliance on a few selected sources or previous assessment work by the same process undermines credibility and legitimacy. An assessment may rely heavily on peer-reviewed journals, publications and quantitative data; or, where quantitative data are inadequate, it may turn to experts who are familiar with the geographic area in question, unpublished datasets, or documentation that has not been published in peer reviewed products (“grey literature”). Traditional knowledge (TK) is another important source in many regions. In addition, experts may extrapolate from well-established findings in one location or region to draw inferences about conditions and trends in other regions or at larger scales. Or they may use models – derived, for example, from reliable data on pressures and impacts in one area or situation – to estimate the impacts of similar pressures under similar conditions in another area. These can all be usefully applied in an assessment, but quality assurance procedures must be in place to ensure scientific credibility.
86. The assessment process itself, when conducted through working groups that review and challenge evidence presented, serves as a rigorous quality assurance and peer review process. This holds for data quality, models, analyses and analytical methods, extrapolations and the use of TK or grey literature. Provided that the range of expertise and interpretational perspectives is adequate, this is the most reliable means to question assumptions and methods, expose unsubstantiated theories and analyses, supply contrary evidence and clarify analyses and conclusions. Such a process is as or more rigorous than the standards for peer review of established journals.
87. Distinct “expert group” assessment processes are a well-established means of utilizing the collective knowledge and experience of experts from different fields and backgrounds to review and supplement the best available *quantitative* information with *qualitative* judgments. A similar challenge-response format among participants serves to ensure quality and resolve differences (Eckley 2001). This type of exercise involves workshops with broad and balanced participation among disciplines (in both environmental and socio-economic fields) and by industry groups and other users together with environmental organizations, academic and research institutions as well as government scientists.
88. International bodies play an important role in developing widely recognized and applied standards and methods for environmental monitoring and assessment, which give confidence that if used correctly, the data are reliable. In addition, some inter-governmental processes have sought to encourage good data quality and comparability through development of manuals and training or inter-calibration exercises to standardize data collection methods.
89. Accepted standards and methods within a given discipline such as water quality or fisheries (including environmental and socio-economic aspects) serve as an important building block for assessment. Not only do they give confidence that the data and analyses can be relied upon, they allow data on conditions and trends within each field to be synthesized and compared within and across regions (horizontal integration) and, importantly, to be integrated in cross-disciplinary assessments. Moreover, the common factual basis afforded by accepted standards and methods supports constructive dialogue among governments and others and the finding of common ground on response actions.

#### *Availability and Accessibility*

90. Maintaining a record of the data and analysis used in an assessment is an essential foundation for future assessments and the ability to evaluate changing conditions. It is a vital aspect of an assessment’s credibility, especially for scientists who wish to verify the basis of assessment findings. It is important that data preservation and access be considered at the outset of an assessment and not as an afterthought. For many developing nations, there is an important need to build capacity for data preservation, management and accessibility. The public availability of assessment products and of the underlying data is equally important for establishing the legitimacy of an assessment, in order to demonstrate that the process is transparent.

91. With regard to long-term preservation and stewardship of data, metadata – describing information sources, definitions and methods of collection and processing -- is essential for “data discovery” (the search for data), the ability to extract and use data from datasets and the interoperability of data systems. With the tremendous changes that have taken place in information and communications technologies during the past 20 years, the number of data providers is growing exponentially and centralized data infrastructures are evolving into distributed data systems. This has both positive (more data can be shared faster) and negative repercussions (concerns about quality, reliability, duplication and different versions of the data/information; can be more difficult for users to find data). There are ongoing efforts to promote metadata standards and improve data interoperability.
92. There are relatively common restrictions on the availability of confidential data from the industry sector and with respect to scientists who have not yet published their findings. Some restrictions may apply to availability of TK. At the same time, in some assessment processes there is general agreement that data confidentiality should not impede the assessment and that an appropriate set of rules defining conditions of access to the data is needed.

### **Best Practices**

- provide for a review and challenge process among experts to evaluate the data, information and methods used in an assessment;
- for expert group processes, ensure balanced participation among relevant stakeholders from industry and conservation organizations, government, traditional communities and scientific institutes as well as among appropriate disciplines;
- use a wide range of relevant, technically-competent information and publication sources in preparing assessments and promote recourse to professional information experts (librarians) for sourcing of materials, including “grey literature”;
- when TK is to be used in an assessment, ensure that there are clear “rules of engagement” so that all participants understand how discrepancies between data and information from TK sources and data and information from “scientific” sources will be handled;
- when “grey literature” is to be used in an assessment, specify how it is to be vetted (e.g., that it must be accepted by lead authors and available to peer reviewers as in the IPCC (NAS 2007));
- where information is limited, specify in the Terms of Reference that the assessment examine how representative the information is for the whole area;
- document quality assurance procedures for data and information in the assessment report;
- in the assessment report, provide a clear description of the data and its limitations; explain fully:
- to which parts of a geographic area the conclusions apply, if they do not apply to the whole area covered by the assessment;
- the period during which data used in the assessment were collected, and whether the assessment contains new data or re-uses data from earlier assessments;
- whether available data and information are representative for the whole of the assessment area, or whether they only apply to a part of the area;
- the standards and processes used in the assessment to scale information upwards and downwards from the scale at which it was collected;
- develop a wide range of standards for data collection, including quality assurance;
- develop a classification or rating system for data;
- develop guidance (e.g., manual) and training programmes to assist governments to improve the quality and comparability of data produced and to strengthen interoperability with international data networks and systems;
- ensure that well-defined standards are used for the creation of metadata;
- ensure that a well-defined data plan is prepared and implemented for each assessment that describes all elements and processes regarding data management, storage, preservation and exchange so as to ensure availability of metadata and long-term access and preservation of all collected data;
- develop a data policy on the availability of data and information;
- provide for website availability of all assessment reports and findings, including access to underlying non-proprietary data.

## 4.5 Evaluation

93. Recent research points to the importance of providing explicitly for a stage of learning and evaluation in an assessment process, particularly before a new iteration is started (e.g., Farrell and Jäger (2005) and Tuinstra and others (2008)). This post-assessment evaluation must consider (1) whether the subsequent assessment needs to include new aspects of the issue under consideration (objectives, scope) as well as new participants, due to advances in scientific understanding and acquisition of new data/information that could have an impact on earlier findings and recommendations; (2) new developments in analytical tools and methods that would improve the assessment; and (3) the state of implementation of response measures and impediments to implementation. It must also review the usefulness and timeliness of assessment products and how they were used by relevant decision-makers so that expert assessors are informed and aware of their influence and any improvements that could be made. A transparent evaluation and subsequent improvements strengthen the relevance and credibility of assessment products and make the process more accountable, enhancing legitimacy.
94. The Evaluation and Oversight Unit in UNEP was established in 1985. Various types of evaluations have been carried out since then, in particular in-depth sub-programme and project evaluation in order to meet the requirements of UN's General Assembly and UNEP's Governing Council. Other evaluations and Management Studies have been carried out to meet the needs of the UNEP Management. The Evaluation and Oversight Unit (EOU) is charged with the responsibility for conducting, coordinating and overseeing evaluations within UNEP. The objective of evaluation in the UN is defined as "to determine as systematically and objectively as possible the relevance, efficiency, effectiveness and impact of the Organizations activities in relation to their objectives". It provides recommendations and a lesson learned for improving future policy, programme and projects and establishes a basis for accountability. The EOU website includes evaluations of the Global International Waters Assessment and the Millennium Ecosystem Assessment.

### Best Practices

- for an individual assessment, provide explicitly for post-assessment review of advances in scientific and methodological knowledge, the effectiveness of response measures and how the assessment influenced policy-makers;
- for the assessment process, provide explicitly for review and evaluation to determine how both products and the process itself could be improved;
- for both, provide for mixed internal/external review to gain both "insider" perspectives on the strengths and weakness of the product and the process as well as "outsider" perspectives; involve assessment users (e.g., decision-makers, managers, enforcement officers) as well as producers to ensure that the next iteration responds to the evolving needs of all stakeholders.

## 4.6 Capacity building and networking

95. "Investments in capacity-building can have payoffs in multiple areas, including (1) expanding the informed audience for assessments, (2) contributing to future assessment effectiveness, (3) expanding the ability of decision-makers to act on scientific information, (4) equipping participants with new knowledge on assessment methodology and tools, and (5) building a scientific community that is more sensitive to the needs and concerns of the broader society" (NAS 2007, pp. 9-10). Capacity building and networking enhance the scientific credibility, legitimacy and relevance of assessments.
96. There is a variety of capacity-building initiatives associated with assessment processes (e.g. with UNEP's GEO process). Participation in global assessment processes has provided experience that has then been used to develop and carry out assessments at regional and sub-regional levels. The development of specialist networks and interactions between expands contacts and information exchange among experts involved in assessment and relevant research, bringing new knowledge and perspectives to an assessment process, while participation in the process strengthens individual capacities and thus the process itself. These developments contribute to deeper understanding of environmental concerns and priorities as well as to achieving consensus on problems and appropriate responses (VanDeveer 2005).

**Best Practices**

- that governments and regional bodies identify technical skills and infrastructure needed to strengthen capacity in monitoring and assessment and determine priorities;
- that governments and regional bodies collaborate with other international bodies to identify gaps and shared priorities as a basis for mobilizing support for capacity-building in monitoring and assessment;
- provide training materials and training venues for monitoring and assessment;
- establish fellowship programmes to develop assessment skills;
- establish funding mechanisms for participation in capacity building initiatives.

**5. Conclusions**

At the global level there is a wide range of assessment processes. The most visible overlap is in the area of biodiversity, where there are several ongoing assessment processes and some recently completed processes all covering the topic as a whole or aspects of it (e.g. forests, marine ecosystems). A further process on biodiversity is being planned<sup>7</sup>.

97. In 1998 the report by UNEP, NASA and the World Bank (Protecting our Planet, Securing our Future: Linkages Among Global Environmental Issues and Human Needs) called for “a more integrative assessment process for selected scientific issues, a process that can highlight the linkages between questions relevant to climate, biodiversity, desertification, and forest issues”. The response to this call has been partially fulfilled but much remains to be done to achieve “Earth System Assessment”. A move towards more integrated “Earth System” assessments could ultimately reduce the number of “single issue” global assessments, provide a more holistic basis for decision-making and reduce reporting requirements to global assessment processes.
98. The main gaps in global assessment process are less in the coverage and more in the awareness of the importance of designing a credible, relevant and legitimate process to ensure that the assessment is influential. Many assessment processes also provide little information on how the process was designed. For example, not all assessment processes provide easily accessible information on who takes part in nominating the pool of experts from which to draw for assessments and peer review or who takes part in the peer review.
99. A fundamental consideration in making assessments influential is periodic review and evaluation so that improvements can be incorporated into future assessments. While there is anecdotal evidence of some assessment processes considering past experience before embarking on a next round for only a few of the global assessment processes are there documented evaluations (e.g. GESAMP was evaluated in 2001 and restructured thereafter, the Global International Waters Assessment (GIWA), GEO 2000, GEO-3 and GEO-4 and the Millennium Ecosystem Assessment were also evaluated). The latter two evaluations were carried out on behalf of UNEP and present excellent examples of external post-assessment evaluations that provide detailed information on lessons learned and recommendations for similar and/or related activities in the future.
100. One important point raised by the evaluation of GIWA is the funding of assessment processes. In most cases the experts are expected to make voluntary contributions to the process. This is problematic for many reasons. With a multitude of ongoing and interlinked assessment processes, the scientific community is being asked to commit a large amount of time for which there is no financial compensation and which detracts from the time available for their other scientific work necessary for career advancement. This calls for a reconsideration of how assessment processes are financed and also within the academic community for a reconsideration of the level of academic credit given to this service to society.

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<sup>7</sup> Consultations have taken place on the possible establishment of an **International Mechanism of Scientific Expertise on Biodiversity (IMoSEB)** to improve the science/policy interface regarding biodiversity change and loss. They were initiated in 2006 by then French President Jacques Chirac to produce recommendations for CBD/COP9. In 2007 the IMoSEB process invited UNEP, in collaboration with the government of France and other governments, the CBD and partners in the IMoSEB process, to convene the meeting noted below. CBD/COP9 Decision IX/15 takes note of the outcomes of the IMoSEB consultative process, welcomes the agreement of the UNEP Executive Director to convene an *ad hoc* open-ended intergovernmental multi-stakeholder meeting to consider establishing an efficient science-policy interface on biodiversity, ecosystem services and human well-being and requests a CBD working group to consider its outcomes and implications for implementation and organization of the work of the Convention and to make recommendations for consideration by CBD/COP10. A concept note developed by UNEP outlines the need and modalities for what is now called the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), building on the Millennium Ecosystem Assessment follow-up initiative and the outcomes of the IMoSEB process. The concept note will be considered at the intergovernmental, multi-stakeholder meeting in November 2008.

101. At the regional level there is also a wide range of assessment processes, although here there is less emphasis on biodiversity assessments than at the global level. There is no GEO-like assessment for the Polar Regions and only Africa and the Latin America and Caribbean region have an iterative process of GEO-like assessments. The other regions (North America, Asia and the Pacific) have only carried out one GEO-like assessment and this was more than 5 years ago. The European region has the most extensive set of regional assessments, including broad assessments of multiple issues and narrow assessments of particular issues and sectors.
102. For the marine environment, the AoA Group of Experts is still completing its analysis of the assessment landscape. Early drafts of this work suggest that while assessment capabilities are strong in many regions, there is a clear need for continued efforts to develop greater expertise around the globe in the technical aspects of marine environmental assessment work. In addition, there are three major areas that need immediate, concerted and ongoing attention: ensuring that assessment processes are well designed, focused and conducted to the highest standards; improving data access and interoperability so that assessment analyses can be extended and integrated with and across regions, and developing integrated ecosystem assessments that can inform on the state of systems rather than just individual sectors.
103. There is a lack of data and indicators for standardised assessments at regional and sub-regional level. Programs for capacity building at national and regional level are needed for the generation of data and environmental indicators. Better inter-agential coordination is needed to reduce duplication of data. An example would be better coordination between Economic Commission of different continents (ECLAC, ESCAP and UNEP) for the collection of environmental, and economic-environmental indicators.
104. The integration of socio-economic aspects into assessments is very mixed. The use of the Drivers-Pressures-State-Impacts-Response framework (as used for example in the GEO process) is the most common and useful approach to integrating socio-economic aspects, although other related approaches have also been successful (e.g. the causal chain analysis in GIWA). Important advances have been made in linking environmental change and changes in ecosystem services to human well-being (in the Millennium Ecosystem Assessment and GEO-4). The recently completed Assessments of Impacts and Adaptations to Climate Change have also advanced the use of vulnerability assessment, as a way to consider the impacts of multiple stresses, the differential exposure of individuals and societal groups and the importance of adaptive capacity. An outlook component of an assessment allows inclusion of socio-economic considerations and the comparison of possible future pathways.
105. Given the wide range of assessment processes that have been carried out or are ongoing, the major question that remains is whether these processes are influencing decision-making and policy implementation. For some issues, such as stratospheric ozone and long-range transport of air pollution, there are success stories. The assessment processes have led to action. For other issues there is less evidence that the assessment is influential. This points to the urgent need to pay more attention to the design and documentation of assessment processes to improve their credibility, relevance and legitimacy, including explicit evaluation of processes and learning from experience. Processes are required that are participatory in all stages, iterative and flexible, and provide a strong basis for strategic decisions through the development of networks of actors with a common understanding of the issue at stake and the pool of possible solutions.

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## Annex 1 Descriptions of Global Assessments

Table No.	Name of assessment and web-address
1.	<b>International Assessment of Agricultural Knowledge Science and Technology for Development</b> <a href="http://www.agassessment.org/">http://www.agassessment.org/</a>
2.	<b>AoA Assessment of Assessments</b> <a href="http://www.unga-regular-process.org/index.php?option=com_frontpage&amp;Itemid=1">http://www.unga-regular-process.org/index.php?option=com_frontpage&amp;Itemid=1</a>
3.	<b>Global Environment Outlook</b> <a href="http://www.unep.org/geo">www.unep.org/geo</a>
4.	<b>Group of Experts on the Scientific Aspects of Marine Environmental Pollution</b> <a href="http://gesamp.net/">http://gesamp.net/</a>
5.	<b>Global International Waters Assessment</b> <a href="http://www.unep.org/dewa/giwa/">http://www.unep.org/dewa/giwa/</a>
6.	<b>Global Biodiversity Assessment</b> <a href="http://earthwatch.unep.net/emergingissues/biodiversity/assessment.php">http://earthwatch.unep.net/emergingissues/biodiversity/assessment.php</a>
7.	<b>Global Biodiversity Outlook</b> <a href="http://www.cbd.int/gbo1/gbo-pdf.shtml">http://www.cbd.int/gbo1/gbo-pdf.shtml</a> <sup>8</sup>
8.	<b>Global Forest Resource Assessment</b>
9.	<b>Intergovernmental Panel on Climate Change</b> <a href="http://www.ipcc.ch">www.ipcc.ch</a>
10.	<b>LADA Land Degradation Assessment in Drylands</b> <a href="http://www.fao.org/nr/lada/index.php?option=com_frontpage&amp;Itemid=75">http://www.fao.org/nr/lada/index.php?option=com_frontpage&amp;Itemid=75</a>
11.	<b>Millennium Ecosystem Assessment</b> <a href="http://www.millenniumassessment.org/en/index.aspx">http://www.millenniumassessment.org/en/index.aspx</a>
12.	<b>OECD Environmental Outlook</b> <a href="http://www.oecd.org/document/20/0,3343,en_2649_34305_39676628_1_1_1_37465,00.html">http://www.oecd.org/document/20/0,3343,en_2649_34305_39676628_1_1_1_37465,00.html</a>
13.	<b>Ozone assessments</b> <a href="http://ozone.unep.org/Assessment_Panels/">http://ozone.unep.org/Assessment_Panels/</a>
14.	<b>State of the World Fisheries and Aquaculture</b> <a href="http://www.fao.org/fishery/sofia/en">http://www.fao.org/fishery/sofia/en</a>
15.	<b>United Nations Scientific Committee on the Effects of Atomic Radiation</b> <a href="http://www.unscear.org/unscear/en/about_us.html">http://www.unscear.org/unscear/en/about_us.html</a>
16.	<b>World Resources Report</b>
17.	<b>World Water Development Report</b> <a href="http://www.unesco.org/water/wwap/wwdr/index.shtml">http://www.unesco.org/water/wwap/wwdr/index.shtml</a>

<sup>8</sup> Website extremely informative about history, background, outputs, current process, membership of advisory board etc.

**Table 1: International Assessment of Agricultural Knowledge Science and Technology for Development.**

Geographic scope	Multi-spatial: global and sub-global assessments with a consistent framework;
Issues covered	Multi-thematic focus embracing nutritional security, livelihoods, human health and environmental sustainability;  Multi-temporal: historical-to-long term (till 2050) perspectives employing use of plausible scenarios;
Participation	Intergovernmental process with multi-stakeholder Bureau comprised of 30 representatives from government and 30 from civil society;  Multiple international agency co-sponsorship (FAO, GEF, UNDP, UNEP, UNESCO, World Bank, and WHO)
Who defines objectives and scope?	The Panel of participating governments, taking into account the views of other stakeholders at the IAASTD Intergovernmental Plenary held in Nairobi from 30 August to 3 September 2004, agreed on the objectives, goals, scope, key questions, design, preparation and peer-review processes, outputs, timetable, budget and governance structure.
Peer review	A document on Principles and Procedures describes the general procedures, role, organisation and purpose of the IAASTD, decision making process as well as procedures for the preparation, <b>review</b> , acceptance, approval, adoption and publication of the IAASTD Report.
Communication/outreach	Executive Summary of the Synthesis report not accepted by all governments Very comprehensive web-site, also documenting the history of the process and all meetings
Availability of reports, data	Summary for decision makers and other material available on the web-site
Sources of knowledge	Integration of local and institutional knowledge;
Review and evaluation of process	Not reported – but process only finished in mid-2008

**Table 2: AoA Assessment of Assessments.**

When was assessment carried out	Currently ongoing
Geographic scope	Global
Issues covered	<p>Water quality          Exploited Living Resources          Habitat Characterizations and Impacts          Lower Trophic Levels          Protected Species          Social and Economic Conditions          Use of Reference Points or Indicators          Direct Policy Analysis          Integration of Assessments across sectors and/or ecosystem components</p> <p>Credibility, legitimacy and saliency of marine assessment processes</p>
Participation	<ul style="list-style-type: none"> <li>• An <i>ad hoc</i> steering group to oversee the execution of the “assessment of assessments.”</li> <li>• Two United Nations agencies (UNEP and IOC/UNESCO) to co-lead the process.</li> <li>• A group of experts to take the lead in preparing this Assessment of Assessments.</li> <li>• Observers to support and assist the group of experts.</li> </ul>
Who defines objectives and scope?	UNGA, Ad Hoc Steering Group
Peer review	Planned
Communication/outreach	
Availability of reports, data	
Sources of knowledge	Expert knowledge, literature surveys
Review and evaluation of process	Not planned

**Table 3: Global Environment Outlook.**

When was assessment carried out	GEO - 1 in 1997; GEO - 2000 in 1999; GEO - 3 in 2002. GEO - 4 in 2007.
Geographic scope	Global, with a chapter on regional assessments.
Issues covered	GEO-4 covered air, land, water (freshwater and marine), biodiversity, and vulnerability of human-environment systems, interlinkages, scenarios and policy measures. The focus was on human well-being and environment for development.
Participation	Experts, multistakeholder consultations, specialised group/institutes
Who defines objectives and scope?	The GEO reports were requested by the UNEP GC. For GEO-4 the scope was defined through a multistakeholder consultation and endorsed by GC.
Peer review	For GEO-4 peer review of the first and second drafts was carried out, with review editors ensuring that all comments were responded to. Regional review meetings were also held.
Communication/outreach	Reports and summary for decision makers published and available on the web. For GEO-4 an Outreach Strategy was prepared.
Availability of reports, data	Reports also available on internet and data in the GEO Data Portal. Range of technical reports also available. Translations into UN languages.
Sources of knowledge	Expert input, peer-reviewed literature
Review and evaluation of process	An evaluation of the GEO-4 process was carried out but not yet available. GEO 2000 and GEO-3 were also evaluated.

**Table 4: Group of Experts on the Scientific Aspects of Marine Environmental Pollution**

When was assessment carried out	Since 1975
Geographic scope	
Issues covered	The scientific aspects of marine environmental protection. Wide range of reports, several on various aspects of aquaculture, oil, chemicals, integrated coastal management, land-based activities, marine biodiversity, biological indicators
Participation	GESAMP itself consists of ideally 25-30 experts, drawn from a wide range of relevant disciplines, who act in an independent individual capacity. Studies and assessments are usually carried out by dedicated working groups, most of whose members are not sitting members of GESAMP but part of the broader GESAMP network.
Who defines objectives and scope?	The primary functions of the Executive Committee are to plan and approve the GESAMP budget and work plan, select members of GESAMP from a pool of experts, propose provisional agendas for GESAMP sessions, and adopt terms of reference for its working groups.
Peer review	Not reported
Communication/outreach	Web site
Availability of reports, data	All reports downloadable from website
Sources of knowledge	Not reported
Review and evaluation of process	An independent, in-depth review of GESAMP in 2001

**Table 5: Global International Waters Assessment**

When was assessment carried out	Began in 1999. Report published in 2006
Geographic scope	The project focused on developing regions, regions with economies in transition and small island states eligible for funding by GEF
Issues covered	The aim of GIWA was to produce a comprehensive and integrated global assessment of international waters, the ecological status of and the causes of environmental problems in 66 water areas in the world, and focus on the key issues and problems facing the aquatic environment in trans-boundary waters. Freshwater shortage, pollution; overfishing and other threats to living resources; habitat and community modification.
Participation	Bottom-up approach involving multidisciplinary regional teams. About 1500 experts from around the world conducted assessments in collaboration with the GIWA core team
Who defines objectives and scope?	
Peer review	
Communication/outreach	Report published in 2006
Availability of reports, data	Printed and on the web-site
Sources of knowledge	Expert input
Review and evaluation of process	An evaluation was carried out. <a href="http://www.unep.org/eou/Reports/Environmental_Assesment/GIWA.asp">http://www.unep.org/eou/Reports/Environmental_Assesment/GIWA.asp</a>

**Table 6: Global Biodiversity Assessment**

When was assessment carried out	The Global Biodiversity Assessment project originated in July 1992 when the GEF Technical and Scientific Advisory Panel recommended to UNEP that a global assessment of current knowledge in the broad field of biodiversity be carried out. Following GEF's agreement to fund it, the project was formally approved by UNEP in May 1993. Published in 1995.
Geographic scope	Global. It was decided at a very early stage that it would not include country-level or regional assessments of data on biodiversity.
Issues covered	Comprehensive review of current knowledge and understanding of the broad field of biodiversity. Not a detailed assessment of biodiversity at a regional or taxonomic level
Participation	The assessment was written by thirteen teams of experts, involving some 300 authors from 50 countries. In addition several hundred scientists from more than 80 countries peer-reviewed the text. The GBA was not part of the Convention process, and had no formal intergovernmental component, but was an independent undertaking commissioned by UNEP and funded by the Global Environment Facility.
Who defines objectives and scope?	A preparatory Group for the GBA convened in 1993.
Peer review	Several hundred scientists from more than 80 countries peer-reviewed the text.
Communication/outreach	Full report published in 1995. Short summary for policy-makers was also produced.
Availability of reports, data	Report published by CUP.
Sources of knowledge	Expert input reflects the published literature which is predominantly in English, even though it very often refers to non English-speaking parts of the world.
Review and evaluation of process	Not recorded

**Table 7: Global Biodiversity Outlook.**

When was assessment carried out	The first edition of the Global Biodiversity Outlook was published and launched in November 2001. The Conference of the Parties decided that the second edition of the Global Biodiversity Outlook should be prepared for publication in 2004. The Global Biodiversity Outlook 2 was launched in Curitiba, Brazil on 20 March 2006. Preparations are currently underway for the production of its third edition. Global Biodiversity Outlook 3 will be formally launched in 2010.
Geographic scope	Global
Issues covered	Summary of the status of biological diversity and an analysis of the steps being taken by the global community to ensure that biodiversity is conserved and used sustainably, and that benefits arising from the use of genetic resources are shared equitably. Information regarding the status and trends of biodiversity, both at global and regional levels, will be presented in GBO-3 as will information regarding the progress made in mainstreaming biodiversity issues into the development agenda. There will be an emphasis on case studies that illustrate the positive actions taken to effectively conserve and sustainably use biodiversity

Participation	To ensure that Global Biodiversity Outlook 3 is successful and meets the expectations from Parties, stakeholders and indigenous and local communities, a GBO-3 Advisory Group has been established. This body oversees and provides detailed guidance on specific aspects of the preparation of GBO-3. The Conference of the Parties also invited the organisations composing the 2010 Biodiversity Indicators Partnership to make available the latest scientific information in accordance with the production plan for Global Biodiversity Outlook and urged Parties and invited other Governments, organizations and relevant scientific bodies to make available data on the status and trends of biological diversity, progress made in the implementing the Convention including its Strategic Plan, and lessons learned in carrying out actions designed to contribute to a significant reduction in the rate of biodiversity loss and the achievement of the three objectives of the Convention.
Who defines objectives and scope?	The preparations for the third edition of Global Biodiversity Outlook are being guided and overseen by an Advisory Group. The Executive Secretary has invited the current and former chairs of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) as well as the Presidents of the eighth, ninth and anticipated tenth meetings of the Conference of the Parties (COP) to participate as members of this Advisory Group. Representatives from various groups and organizations have also been invited to participate so that they can provide detailed guidance on specific aspects of the preparation of the publication. The Conference of the Parties provided further guidance on the preparation of the third edition of the Global Biodiversity Outlook during its ninth meeting in Bonn, Germany, in 2008. In particular, in decision IX/10 the Conference of the Parties welcomed the scope, format, work plan, communication strategy and financial plan of the third edition of Global Biodiversity Outlook and requested the Executive Secretary to proceed with the preparation of the publication
Peer review	For GBO-3, SBSTTA members will be encourage to work intercessionally to review the draft of the publication. Peer review also mentioned but not described in detail.
Communication/outreach	Global Biodiversity Outlook is a periodic report on biological diversity and the implementation of the Convention, and is made available in all official United Nations languages. For GBO-3 a Communications Strategy is available on the web-site
Availability of reports, data	Several ancillary products, including but not limited to, brochures, fliers, presentations, key messages and a web-based data portal, are also planned. Global Biodiversity Outlook 3 (GBO-3) will be an important vehicle for informing a variety of audiences of the importance of biodiversity and the progress made in meeting the 2010 Biodiversity Target. The GBO-3 Information Database is currently under construction. When operational the GBO-3 Information Database will be publicly accessible and contain information relevant to the Global Biodiversity Outlook 3. The information contained in the database will be gathered from a variety of sources, including but not limited to peer review journals, government reports and institutional publications. The information contained in the database will be classified according to a variety of criteria such that it can be easily managed and retrieved.
Sources of knowledge	Global Biodiversity Outlook 3 will use information provided by Parties in their National Reports to highlight the practical actions taken to promote biodiversity initiatives. The information provided by the Parties will be supplemented by information, including biodiversity indicators, from various assessments and partner agencies.
Review and evaluation of process	Not documented

**Table 8: Global Forest Resource Assessment.**

When was assessment carried out	FAO has been monitoring the world's forests at 5 to 10 year intervals since 1946. Forest Resources of the World (1948) ;World Forest Inventories (1953,1958 and 1963); Regional Forest Resources Assessments (1970s); FRA 1980; Interim Assessment 1988; FRA 1990; Interim Assessment 1995; FRA 2000; FRA 2005.
Geographic scope	Global
Issues covered	The scope of the assessments has gradually expanded. The first assessments were focused on wood supply in response to fears of a wood shortage after the Second World War. Today, the assessments have a much wider scope, providing a holistic perspective on global forest resources, their management and uses. Address seven broad topics aimed at monitoring progress towards sustainable forest management. <ol style="list-style-type: none"> <li>1. Extent of forest resources and their contribution to the global carbon cycle</li> <li>2. Forest health and vitality</li> <li>3. Forest biological diversity</li> <li>4. Productive functions of forests</li> <li>5. Protective functions of forests</li> <li>6. Socio-economic functions of forests</li> <li>7. Legal, policy and institutional framework related to forests</li> </ol>
Participation	FRA 2005 started with an expert consultation in 2002. Involved more than 800 people, coordinated by the Forest Resources Development Service at FAO. 8 staff members and consultants were engaged full time including focal points for each region. An FRA Advisory Group was established with members from partner institutions.
Who defines objectives and scope?	
Peer review	By advisory group.
Communication/outreach	Detailed information and reports on web-site. In order to facilitate the dissemination of the findings of FRA 2005 to a wider audience, the NGO GreenFacts has summarized the FRA 2005 main report according to a three-level structure of increasing detail.
Availability of reports, data	In addition to the main report in 2005 outputs included country reports in English, French or Spanish), global tables, a document on key findings in a flyer in all UN languages, thematic studies and working papers. Web site has in-depth information (including downloadable reports, data, maps and figures) on the most recent global assessment (FRA 2005) as well as information on earlier assessments and progress towards the next assessment – FRA 2010. Multilingual CD-ROM containing the main report, key findings, the 229 country reports, global result tables in Excel format, maps, graphs and a PowerPoint presentation.
Sources of knowledge	The Global Forest Resources Assessments (FRA) are based on data that countries provide to FAO in response to a common questionnaire. FAO then compiles and analyses the information and presents the current status of the world's forest resources and their changes over time.
Review and evaluation of process	An evaluation was carried out at the end of the process

**Table 9: IPCC**

When was assessment carried out	Established in 1988. IPCC reports published in 1990, 1995, 2001, 2007.
Geographic scope	Global
Issues covered	Surveys the latest scientific, technical and socio-economic literature produced worldwide relevant to the understanding of the risk of human-induced climate change, its observed and projected impacts and options for adaptation and mitigation.
Participation	<p>The governments: the IPCC is open to all member countries of WMO and UNEP. Governments of participate in plenary Sessions of the IPCC where main decisions about the IPCC work-programme are taken and reports are accepted, adopted and approved. They also participate the review of IPCC Reports.</p> <p>The scientists: hundreds of scientists all over the world contribute to the work of the IPCC as authors, contributors and reviewers.</p> <p>The people: as United Nations body, the IPCC work aims at the promotion of the United Nations human development goals</p>
Who defines objectives and scope?	Intergovernmental process together with experts
Peer review	Two stage review. First review by experts, second review by governments and experts.
Communication/outreach	Web site also includes audio-visual material for download. Documentation of the history of the process, all reports, including technical reports and special reports.
Availability of reports, data	All reports available for download.
Sources of knowledge	Expert input, peer-reviewed literature other publications
Review and evaluation of process	No documented evaluation

**Table10: LADA Land Degradation Assessment in Drylands**

When was assessment carried out	The Land Degradation Assessment in Drylands project (LADA) started in 2006 with the general purpose of creating the basis for informed policy advice on land degradation at global, national and local level. This goal is to be realized through the assessment of land degradation at different spatial and temporal scales and the creation of a baseline at global level for future monitoring. The project will complete its activity by 2010.
Geographic scope	Six countries participate in the project with their national institutions: Argentina, China, Cuba, Senegal, South Africa, and Tunisia.
Issues covered	<p>The <b>status and trends</b> of land degradation in drylands in all its components including biodiversity;</p> <p>The <b>hotspots</b>: the areas with the most severe land constraints, the actual degradation of such areas at risk of degradation, drought or flooding,</p> <p>The <b>bright spots</b>: the areas where conducive policies and actions have slowed or reversed the degradation and the priority areas where the conservations and rehabilitation of fragile lands could be most cost-effective. Such information will assist communities and governments in the design of effective remedial measures and supportive policies.</p>
Participation	Participatory, decentralised country-driven approach Different kinds of actors are involved in the implementation: FAO and UNEP being the executing and the implementing agency respectively, while the Global Environment Fund (GEF) is the main donor of the project. International organizations, universities, research centres and other projects are among the other partners of the project.
Who defines objectives and scope?	
Peer review	Not reported
Communication/outreach	Extensive new website
Availability of reports, data	
Sources of knowledge	By marshalling the extensive knowledge and varied expertise already available worldwide. Participatory rural appraisals, expert assessment, remote sensing, modelling, local knowledge
Review and evaluation of process	

**Table 11: Millennium Ecosystem Assessment**

When was assessment carried out	<p>The specific proposal for the Millennium Ecosystem Assessment arose during a brainstorming meeting held at World Resources Institute on May 17, 1998.</p> <p>Between October 1999 and July 2000, the Conference of Parties of the CBD and CCD formally endorsed the MA as a mechanism to meet some of their assessment needs. Formal public launch of the MA in June 2001. MA findings publicly launched in March 2005</p>
Geographic scope	The MA was also a multi-scale assessment, which included component assessments undertaken at multiple spatial scales – global, sub-global, regional, national, basin and local levels.
Issues covered	The objective of the MA was to assess the consequences of ecosystem change for human well-being and the scientific basis for action needed to enhance the conservation and sustainable use of those systems and their contribution to human well-being. A state-of-the-art scientific appraisal of the condition and trends in the world's ecosystems and the services they provide (such as clean water, food, forest products, flood control, and natural resources) and the options to restore, conserve or enhance the sustainable use of ecosystems.
Participation	The MA has involved the work of more than 1,360 experts worldwide.
Who defines objectives and scope?	The specific proposal for the Millennium Ecosystem Assessment arose during a brainstorming meeting held at World Resources Institute on May 17, 1998 to discuss plans for the biennial World Resources Report, published by WRI, UNEP, World Bank, and UNDP.
Peer review	Two rounds of review of the draft reports by experts and governments, which took place in 2004.
Communication/outreach	Detailed web-site with all reports, history of the process, visual material etc.
Availability of reports, data	<p>The first set of products presenting the findings of the assessment consists of one over-arching synthesis and 5 others that interpret the MA findings for specific audiences. In late 2003, the MA and Island Press published "Ecosystems and Human Well-being: A Framework for Assessment." The book lays out the assumptions, processes and parameters that were used in the MA.</p> <p>A third set of reports, comprised of about 32 official and associated sub-global assessments were released from late 2005 to 2006, and were published by the sub-global assessment teams themselves.</p>
Sources of knowledge	The MA synthesized information from the scientific literature and relevant peer-reviewed datasets and models. It incorporated knowledge held by the private sector, practitioners, local communities, and indigenous peoples. The MA did not aim to generate new primary knowledge, but instead sought to add value to existing information by collating, evaluating, summarizing, interpreting, and communicating it in a useful form. An important feature of the MA was the emphasis on including different knowledge systems, apart from "scientific knowledge". To explore this topic, the MA organized an international conference "Bridging Scales and Epistemologies" in March, 2004, in Alexandria, Egypt.
Review and evaluation of process	Evaluation by UNEP <a href="http://www.unep.org/eou/">http://www.unep.org/eou/</a>

**Table 12: OECD Environmental Outlook.**

When was assessment carried out	2001, 2007
Geographic scope	The <i>OECD Environmental Outlook to 2030</i> explores possible ways in which the global environment may develop, emphasising the economic rationality of ambitious environmental policy and showing why it is desirable for the OECD to work with large developing countries such as Brazil, Russia, India and China
Issues covered	Environmental outlook to 2030 based on developments in underlying economic and social factors that drive these changes. Climate change, biodiversity loss, water scarcity, (agriculture, energy transport), health impacts of build up of chemicals in environment
Participation	Experts drafting the chapters
Who defines objectives and scope?	OECD
Peer review	By expert groups
Communication/outreach	Report uses “traffic light symbols” to indicate the magnitude and direction of pressures on the environment and environmental conditions. Used in the Executive Summary and in the Key Messages boxes at the start of every chapter
Availability of reports, data	Reports available in published form. Summary on web-site
Sources of knowledge	Built on the OECD’s economic and environmental modelling capacity, and rigorous policy analysis. Background report to the OECD Environmental Outlook to 2030; Overviews, details, and methodology of model-based analysis This background report provides overviews and details of the model-based analyses for the Outlook. The global analyses have been conducted for 24 regions. They cover climate change; urban air pollution and related health impacts; nutrient loading to the aquatic environment by agriculture and by trends in sanitation and sewerage; terrestrial biodiversity.
Review and evaluation of process	Not reported

**Table 13: Ozone assessments.**

When was assessment carried out	1985, 1988, 1991, 1994, 1998, 2002, and 2006
Geographic scope	
Issues covered	The scientific issues of ozone depletion; environmental effects of ozone depletion; status of alternative substances and technologies as well as their economic implications. In addition, the Technology and Economic Assessment Panel produces a progress report every year to review the status of alternatives and technologies, and to address the various requests given to them by the Parties including evaluation of nominations for essential use exemptions for Annex A and B substances, and nominations for critical use exemptions for methyl bromide.
Participation	The Co-Chairs and the current set of Lead Authors meet to further plan and coordinate the contents of the chapters and the preparation of first drafts. The Authors are aided by contributed information from a large body of researchers worldwide
Who defines objectives and scope?	The Scientific Assessment Panel assesses the status of and other scientific aspects of ozone layer depletion. The three Co-chairs, with input from an ad-hoc international steering group of researchers, plan the scope, content, and Authors of a forthcoming assessment report.
Peer review	The resulting drafts undergo peer review (with several reviewers per chapter) and a subsequent week-long panel review, at which the chapter conclusions are agreed upon and the Executive Summary is finalized.
Communication/outreach	The main reports of the panels are published every four years as required by the Meeting of the Parties. All of the reports have an executive summary that is distributed more widely than the main report. It became customary to add a set of questions and answers – mainly for non-expert readers – to the executive summary.
Availability of reports, data	Published and on web-site, data also available on web-site.
Sources of knowledge	310 international scientific experts who contributed to its preparation and review (for Science Panel report)
Review and evaluation of process	Not reported

**Table 14: State of the World Fisheries and Aquaculture.**

When was assessment carried out	Published every two years. First in 1995, last three 2002, 2004, 2006
Geographic scope	Global
Issues covered	A comprehensive, objective and global view of capture fisheries and aquaculture, including associated policy issues. The issue of governance given particular attention in 2006
Participation	Prepared by FAO Fisheries and Aquaculture Department staff,
Who defines objectives and scope?	FAO?
Peer review	Not reported
Communication/outreach	Contains a CD-ROM with the <i>World Fisheries and Aquaculture Atlas</i> .
Availability of reports, data	Published and available on web-site
Sources of knowledge	Not reported
Review and evaluation of process	Not reported

**Table 15: United Nations Scientific Committee on the Effects of Atomic Radiation.**

When was assessment carried out	UNSCEAR was established by the General Assembly of the United Nations in 1955. <u>The last UNSCEAR report to the General Assembly on these matters was issued in the year 2000 and the next report is envisaged for 2008.</u>
Geographic scope	UNSCEAR collects and analyses data on the <b>global and regional</b> levels and trends of human exposure to ionizing radiation.
Issues covered	Levels and effects of exposure to ionizing radiation.
Participation	The Secretariat collates relevant data submitted by UN Member States, international organizations and non-governmental organizations, and engages specialists to analyse those data, to study relevant scientific literature and produce scientific reviews.
Who defines objectives and scope?	The Committee's programme of work is approved by the General Assembly, and extends typically over a 4-5 year period.
Peer review	Not reported
Communication/outreach	Website. Technical reports
Availability of reports, data	Since its inception, UNSCEAR has issued only 16 major publications
Sources of knowledge	The Secretariat collates relevant data submitted by UN Member States, international organizations and non-governmental organizations, and engages specialists to analyse those data, to study relevant scientific literature and produce scientific reviews. The Secretariat is planning to consult with designated officers of Governments and of relevant international organizations with a view to developing more efficient mechanisms for collecting, analysing and disseminating relevant information on radiation exposures for the Committee's next cycle, which will commence after 2008.
Review and evaluation of process	Not reported

**Table 16: World Resources Report.**

When was assessment carried out	Most recent assessment 2008 World Resources 2008: Roots of Resilience - Growing the Wealth of the Poor. Started 1986, published every 1-3 years
Geographic scope	Global
Issues covered	An expanding list including ecosystems global warming governance sustainable markets
Participation	Authors: United Nations Development Programme, United Nations Environment Programme, World Bank, World Resources Institute
Who defines objectives and scope?	Partner institutions
Peer review	"extensive"
Communication/outreach	Reports available in printed form and on the web. Richly illustrated
Availability of reports, data	Earth Trends is a comprehensive online database, maintained by the World Resources Institute that focuses on the environmental, social, and economic trends that shape our world.
Sources of knowledge	Not reported
Review and evaluation of process	Not reported

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**Table 17: World Water Development Report.**

When was assessment carried out	The United Nations World Water Development Report, released every three years in conjunction with the World Water Forum, is the UN's flagship report on water. 2003, 2006 planned 2009
Geographic scope	Comprehensive picture of freshwater resources in all regions and most countries of the world
Issues covered	Overall picture of the state of the world's freshwater resources.
Participation	The development of the WWDR, coordinated by WWAP, is a joint effort of the 24 UN agencies and entities which make up UN-Water, working in partnership with governments, international organizations, non-governmental organizations and other stakeholders.
Who defines objectives and scope?	The UN system, through the ACC/SCWR, has the mandate, credibility and capacity to take on the task of systematically marshalling global water knowledge and expertise to develop over time the necessary assessment of the global water situation, as the basis for action to resolve water crises.
Peer review	Not reported
Communication/outreach	WWDR2 is aimed at a wide audience, including all those interested or directly involved in the formulation and implementation of water-related policies, as well as managers, researchers, teachers, students and, of course, water users themselves.
Availability of reports, data	A <b>Water Information Network</b> comprising: <ul style="list-style-type: none"> <li>- global-scale meta-database;</li> <li>- knowledge management systems to facilitate the assessment and dissemination of information;</li> <li>- an online library, website and newsletter.</li> </ul>
Sources of knowledge	Not reported
Review and evaluation of process	Not reported

## Annex 2 Regional Marine Assessments

No.	Table
1.	Broad Assessments (from the GRAMED database)
2.	Narrow Assessments (from the GRAMED database)

**Table 1: Broad Assessments (from the GRAMED database)**

<b>Region:</b>	<b>Name of Assessment:</b>
Eastern African Seas, Western African Seas	African Process for the development and protection of the marine and coastal environment
Baltic Sea, Mediterranean, North-East Atlantic Ocean	European Lifestyles Marine Ecosystems
Baltic Sea, Mediterranean, North-East Atlantic Ocean	Europe's Environment
North-East Atlantic Ocean	North Sea Quality Status Report
North-East Atlantic Ocean	Quality Status Report
North-East Atlantic Ocean	Trilateral Monitoring and Assessment Programme
Wider Caribbean Sea	Caribbean Large Ecosystem Project: Preliminary Transboundary Diagnostic Analysis
South-East Pacific Ocean	Global International Waters Assessment Humboldt Current (64) & Eastern Equatorial Pacific (65), GIWA Regional assessment
Southern Indian Ocean	Global International Waters Assessment Indian Ocean Islands, GIWA Regional assessment 45b
Eastern African Seas, South Asian Seas	Large Marine Ecosystems of the Indian Ocean - Assessment, Sustainability and Management
South-East Pacific Ocean	Marine litter in the Southeast Pacific Region: a review of the problem
Baltic Sea	Miljö tillstånd i egentliga Östersjön 2005
Mediterranean	State of the Marine and Coastal Environment in the Mediterranean Region.

**Table 2: Narrow Assessments (from the GRAMED database)**

<a href="#">An Atlas of Sea Turtle Nesting Habitat for the Wider Caribbean Region</a>	Narrow Assessment	Regional
<a href="#">Assessment of the coastal fish in the Baltic Sea (2006)</a>	Narrow Assessment	Regional
<a href="#">Assessment of the State of Microbial Pollution of the Mediterranean Sea</a>	Narrow Assessment	Regional
<a href="#">Assessment of Transboundary Pollution Issues in the Mediterranean Sea</a>	Narrow Assessment	Regional
<a href="#">Atlantic and Gulf Rapid Reef Assessment program</a>	Narrow Assessment	Regional
<a href="#">Caribbean Sea Ecosystem Assessment</a>	Narrow Assessment	Regional
<a href="#">Climate Change in the Baltic Sea Area</a>	Narrow Assessment	Regional
<a href="#">Daily oil losses in shipping crude oil: measuring crude oil loss rates in daily North Sea shipping operations.</a>	Narrow Assessment	Regional
<a href="#">Dioxins in the Baltic Sea</a>	Narrow Assessment	Regional
<a href="#">Discharges, Waste Handling and Air Emissions from Offshore Installations for 1998-1999.</a>	Narrow Assessment	Regional
<a href="#">European Commission Directorate General Environment Service Contract on Ship Emissions: Assignment, Abatement and Market-based Instruments. Task 2c – SO2 Abatement.</a>	Narrow Assessment	Regional
<a href="#">Impacts of trawling on benthic habitats in the subantarctic and high antarctic - Benthic Invertebrate Database</a>	Narrow Assessment	Regional
<a href="#">LME - BASELINE ASSESSMENT OF SOURCES &amp; MANAGEMENT OF LAND-BASED MARINE POLLUTION IN THE BCLME REGION- BEHP/LBMP/03/01</a>	Narrow Assessment	Regional
<a href="#">Losses of Selected Hazardous Substances and Metals by Leaching from Sea Ships to the Greater North Sea</a>	Narrow Assessment	Regional
<a href="#">Management of large pelagic fisheries in CARICOM countries</a>	Narrow Assessment	Regional
<a href="#">Methodology for Calculating Emissions from Ships. 1. Update of Emission Factors.</a>	Narrow Assessment	Regional
<a href="#">NAFO Fish Stock Assessments</a>	Narrow Assessment	Regional
<a href="#">OSPAR Report on Discharges, Spills and Emissions from Offshore Oil and Gas Installations in 2005 including assessment of data reported in 2004 and 2005</a>	Narrow Assessment	Regional
<a href="#">Protecting the Mediterranean from land-based pollution</a>	Narrow Assessment	Regional
<a href="#">Quality Status Report 2000</a>	Narrow Assessment	Regional
<a href="#">Quantification of Emissions from Ships associated with Ship Movements between Ports in the European Community.</a>	Narrow Assessment	Regional
<a href="#">Radioactivity in the Baltic Sea 1992-1998</a>	Narrow Assessment	Regional

<a href="#">Rapid Assessment of Anthropogenic Impacts on Select Transboundary Watersheds of the Mesoamerican Barrier Reef Systems (MBRS) Region</a>	Narrow Assessment	Regional
<a href="#">Reefs at Risk in Southeast Asia</a>	Narrow Assessment	Regional
<a href="#">Reefs at Risk in the Caribbean</a>	Narrow Assessment	Regional
<a href="#">Regional review on aquaculture development. I. Latin America and the Caribbean – 2005. FAO Fisheries Circular 1017/1 2006.</a>	Narrow Assessment	Regional
<a href="#">Report of the Study Group on Fisheries and Ecosystem Responses to Recent Regime Shifts</a>	Narrow Assessment	Regional
<a href="#">Report on Marine Pollution Indicators in Mediterranean Countries</a>	Narrow Assessment	Regional
<a href="#">Review of the state of world marine fishery resources. FISHERIES TECHNICAL PAPER 457 - Southeast Pacific Area 87.</a>	Narrow Assessment	Regional
<a href="#">Sea water desalination in the Mediterranean. Assessment and guidelines.</a>	Narrow Assessment	Regional
<a href="#">Seabirds: interactions with longline fisheries: areas and mitigation tools – 2007 AND Tunas and billfishes in the eastern Pacific Ocean in 2005 - 2006</a>	Narrow Assessment	Regional
<a href="#">SeagrassNet monitoring across the Americas: Case Studies of seagrass decline.</a>	Narrow Assessment	Regional
<a href="#">Socio-economic aspects of the wastewater problem in the south east Pacific.</a>	Narrow Assessment	Regional
<a href="#">State of the Marine Environment in the NOWPAP Region</a>	Narrow Assessment	Regional
<a href="#">Status of Caribbean Coral Reefs After Bleaching and Hurricanes in 2005</a>	Narrow Assessment	Regional
<a href="#">Thematic report: Status of the hot spots in Saint-Petersburg and the Leningrad region. Thematic report: Status of the hot spots in Denmark, Finland, Germany and Sweden .</a>	Narrow Assessment	Regional
<a href="#">Transboundary Diagnostic Analysis for the South China Sea.</a>	Narrow Assessment	Regional
<a href="#">Asian Freshwater and Coastal Cetacean Program</a>	Narrow Assessment	Regional
<a href="#">Assessment of Coastal Fish in the Baltic Sea</a>	Narrow Assessment	Regional
<a href="#">Assessment of Oil and Gas Activities in the Arctic</a>	Narrow Assessment	Regional
<a href="#">BALTEX Assessment of Climate Change for the Baltic Sea basin - Phase 2</a>	Narrow Assessment	Regional
<a href="#">ICCAT monitoring reports</a>	Narrow Assessment	Regional
<a href="#">Indian Ocean Tuna Commission Monitoring program</a>	Narrow Assessment	Regional
<a href="#">International Bottom Trawl Survey</a>	Narrow Assessment	Regional
<a href="#">International Pacific Halibut Commission monitoring program</a>	Narrow Assessment	Regional

<a href="#">Mapping of Fish and Shellfish Diseases</a>	Narrow Assessment	Regional
<a href="#">Marine Environmental Monitoring Network</a>	Narrow Assessment	Regional
<a href="#">Mediterranean Mussel Watch Program</a>	Narrow Assessment	Regional
<a href="#">NAFO statistical catch data</a>	Narrow Assessment	Regional
<a href="#">NASCO database and assessment activities</a>	Narrow Assessment	Regional
<a href="#">NEAFC assessment activities</a>	Narrow Assessment	Regional
<a href="#">NOAA Gulf of Mexico Hypoxia</a>	Narrow Assessment	Regional
<a href="#">NOAA The State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States: 2005</a>	Narrow Assessment	Regional
<a href="#">Resource stock assessments</a>	Narrow Assessment	Regional
<a href="#">Sea turtle population/mortality monitoring</a>	Narrow Assessment	Regional
<a href="#">Southern Ocean Whale and Ecosystem Research Programme</a>	Narrow Assessment	Regional
<a href="#">Stock Assessment Process</a>	Narrow Assessment	Regional
<a href="#">The Oceanic Fisheries Programme</a>	Narrow Assessment	Regional
<a href="#">The State of Deep Coral Ecosystems of the United States</a>	Narrow Assessment	Regional

## Annex 3 Regional Assessments of the AIACC Project

[Draft AIACC Final Report \[5.4 MB PDF download\]](#) (2007): Climate Change Vulnerability and Adaptation in Developing Country Regions

[Final Report Project No. AF 04 \[2.8 MB PDF download\]](#) (2006): Impacts and Adaptations to Climate Change in the Biodiversity Sector in Southern Africa (Scholes, Robert J.)

[Final Report Project No. AF 07 \[15.2 MB PDF download\]](#) (2006): The Development of Regional Climate Change Scenarios for Sub Saharan Africa (Hewitson, Bruce C.)

[Final Report Project No. AF 14 \[2.5 MB PDF download\]](#) (2006): Environmental Strategies to Increase Human Resilience to Climate Change: Lessons for Eastern and Northern Africa (Elasha, Baggis Osman)

[Final Report Project No. AF 23 \[9.2 MB PDF download\]](#) (2006): Food Security, Climate Variability and Climate Change in Sub Saharan West Africa (Adejuwon, James)

[Final Report Project No. AF 47 \[7.1 MB PDF download\]](#) (2006): Estimating and Comparing Costs and Benefits of Adaptation Projects: Case Studies in South Africa and The Gambia (Nkomo, Jabavu C. and Gomez, Bernard)

[Final Report Project No. AF 90 \[7.1 MB PDF download\]](#) (2006): Assessment of Impacts, Adaptation, and Vulnerability to Climate Change in North Africa: Food Production and Water Resources (Abou-Hadid, Ayman F.)

[Final Report Project No. AF 91 \[4.8 MB PDF download\]](#) (2006): Climate Change Induced Vulnerability to Malaria and Cholera in the Lake Victoria Region (Wandiga, Shem O.)

[Final Report Project No. AS 06 \[7.2 MB PDF download\]](#) (2006): Climate Change Vulnerability and Adaptation in Livestock Sector of Mongolia (Batima, Punsalmaa)

[Final Report Project No. AS07 \[25.5 MB PDF download\]](#) (2006): Vulnerability to Climate Change Related Water Resource Changes and Extreme Hydrological Events in Southeast Asia

[Final Report Project No. AS 21 \[21.9 MB PDF download\]](#) (2006): An Integrated Assessment of Climate Change Impacts, Adaptations and Vulnerability in Watershed Areas and Communities in Southeast Asia (Lasco, Rodel D. and Boer, Rizaldi)

[Final Report Project No. AS 25 \[9.4 MB PDF download\]](#) (2006): Vulnerability and Adaptation to Climate Variability and Change in Western China (Yin, Yongyuan)

[Final Report Project No. LA 26 \[26.8 MB PDF download\]](#) (2005) Global Climate Change and the Coastal Areas of the Rio de la Plata (Barros, Vicente)

[Final Report Project No. LA 27 \[2.9 MB PDF download\]](#) (2006): Climate Change and Variability in the Mixed Crop/Livestock Production Systems of the Argentinean, Brazilian and Uruguayan Pampas (Gimenez, Agustin)

[Final Report Project No. LA 29 \[11.8 MB PDF download\]](#) (2006): Vulnerability and Adaptation to Climate Change: The Case of Farmers in Mexico and Argentina (Gay, Carlos)

[Final Report Project No. LA 32 \[11.5 MB PDF download\]](#) (2006): Vulnerability and Adaptation of Estuarine Systems of the Rio de la Plata (Nagy, Gustavo)

[Final Report Project No. SIS06 \[27 MB PDF download\]](#) (2006): The Threat of Dengue Fever in the Caribbean: Impacts and Adaptation (Chen, Anthony)

[Final Report Project No. SIS09 \[6.5 MB PDF download\]](#) (2007): Modeling Climate Change Impacts on Viti Levu (Fiji) and Aitutaki (Cook Islands) (Koshy, Kanayathu)

[Final Report Project No. SIS90 \[10.2 MB PDF download\]](#) (2007): Impact of Climate Change on Tourism in Seychelles and Comoros (Payet, Rolph)

[Final Report Project No. AF 92 \[13.1 MB PDF download\]](#) (2007): Vulnerability of Rural Sahelian Households to Drought: Options for Adaptation (Adepetu, A. A.)

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