



STATISTICS ON BIODIVERSITY

Workshop on Environment statistics

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Headlines of the presentation

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Definitions

➤ **Biodiversity**

The 1992 Convention on Biological Diversity (CBD) carries an internationally accepted definition of biodiversity as “... the variability among living organisms from all sources, inter alia, terrestrial, marine and other aquatic ecosystems and ecological complexes of which they are part, this includes diversity within species, between species and of ecosystems” (Glowka *et al.*, 1994).

➤ **Protected Areas**

The IUCN defines a protected area as: An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.



Definitions

➤ **Ecosystem**

The A Community of plants, animals and smaller organisms that live, feed, reproduce and interact in the same area or environment

➤ **Ecosystem service**

A service people obtain from the environment. Ecosystem services are the transformation of natural assets (soil, plants and animals, air and water.

They can be viewed as provisioning such as food and water; regulating, for example, flood and disease control; cultural such as spiritual, recreational and cultural benefits; or supporting like nutrient cycling that maintain the conditions for the life on Earth. Ecosystem goods include food, medicinal plants, construction materials, tourism and recreation, and wild genes for domestic plants and animals.



IUCN's Ecosystem Management Program, IUCN's Commission on Ecosystem management (CEM) and IUCN's Commission on Survival Species (SSC)

- **The IUCN has established a certain number of vital tools for sustainable management of natural resources, such as the *Red List of Endangered Species*, *categories of protected areas*, *the World Parks and World Conservation Congresses*, or *TRAFFIC*, a network formed jointly with the WWF that monitors global trade in threatened species. IUCN also provides support to States: in particular, the Union has assisted more than 75 countries in designing and implementing their national biodiversity strategies. Furthermore, IUCN supports the Secretariats of some multilateral environmental conventions and treaties.**
- **In addition, IUCN enjoys observer status at the United Nations General Assembly.**



Policy and Management issues

➤ **The Convention on Biological Diversity (CBD)**

The The Convention on Biological Diversity is one of the most broadly subscribed international environmental treaties in the world. Opened for signature at the Earth Summit in Rio de Janeiro in 1992,

it had in 2007 190 Parties—189 States and the European Community—who have committed themselves to its three main goals:

- the conservation of biodiversity;
- sustainable use of its components and ;
- the equitable sharing of the benefits arising from the utilization of genetic resources.

Since the launching of the CBD, 8 meetings of the Conference of the Parties to the Convention on Biological Diversity. The COP8 was held at Curitiba, Brazil, 20-31 March 2006.

The headquarters of the Secretariat of the Convention is located in Montreal

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Policy and Management issues

➤ The Convention on Biological Diversity (CBD)

- Convention on Biological Diversity (CBD) refers to the use of Environmental Assessment through Article 7, which points out the need of identifying *“processes and categories of activities which have or likely to have significant adverse impacts on the conservation and sustainable use of biological diversity, and monitor their effects through sampling and other techniques”*. Article 14, of CBD states that each contracting party, as far as possible, shall:
 - a) introduce appropriate procedures requiring environmental impact assessment of its proposed projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects and , where appropriate, allow for public participation in such procedures;
 - b) introduce appropriate arrangements to ensure that the environmental consequences of its programs and policies that are likely to have significant adverse impacts on biological diversity are duly taken into account.



Latest Policy issues

➤ **Paris – 13 July 2007. The second meeting of the Ad Hoc Open-ended Working Group on the Review of the Implementation of the Convention (WGRI-2)**

The second meeting of the Ad Hoc Open-ended Working Group on the Review of the Implementation of the Convention (WGRI-2), held with 360 participants at the headquarters of the United Nations Educational, Scientific and Cultural Organization (UNESCO) in Paris from 9 to 13 July 2007 . Since the launching of the CBD, 8 meetings of the Conference of the Parties to the Convention on Biological Diversity. The COP8 was held at Curitiba, Brazil, 20-31 March 2006.

The meeting was preceded by training sessions on national biodiversity strategies and action plans (NBSAPs) that were organized with the Global Environment Facility (GEF) and the United Nations Environment Programme (UNEP) and the United Nations Development Programme (UNDP). The training, hosted by the Natural History Museum.

➤ **Paris – 11 July 2007. Mr. Ahmed Djoghlaif, Executive Secretary of the Convention**

While signing a MOU with IUCN, said “It is befitting that the Memorandum be signed at a time when the G8, under the German presidency, has put biodiversity on its agenda, which has paved the way for Japan as the Chair of next year’s G8 Summit to also pledge to make biodiversity a priority agenda item . It is also befitting that this agreement is being signed here in Paris at time when the 365 participants to WGRI 2 are discussing the ways and means to integrate biodiversity into development plans and strategies for achieving the Millennium Development Goals.”

Biodiversity indicators:

Biodiversity indicators are needed to monitor and assess:

- **Status and trends of biological diversity and its components**
- **Direct and underlying causes of biodiversity loss and degradation, including the effects of processes and categories of activities which have or are likely to have significant adverse impacts on biological diversity, and the effectiveness of measures taken including capacity needed for the implementation of the Convention.**

It requires the collection of a base line data on the biodiversity of the site potential to be affected by any development project in order to study the likely effects and suggest possible mitigation measures as well as to note the changes if any, due to the implementation of the project.



Biodiversity indicators:

Biodiversity indicators are needed to monitor and assess:

A questionnaire survey carried out in its party countries by CBD secretariat regarding the commonly used or acceptable biodiversity indicators provide a long list of indicators ranging from general to forest, agriculture, inland water, coastal and marine biodiversity.

Biodiversity indicators:

But it does not mean that a project proposal subjected to EIA in that country should not consider the effect on biodiversity in the proposed site on ecosystem approach. Some indicators remarkably useful for EIA are:

- Listing of flora and fauna with special attention on endangered, threatened, vulnerable and endemic species.**
- Forest area to be cleared.**
- Number of trees (species, size and diameter class) to be felled**
- Loss of habitat**
- Change in land use and landscape**
- Potential forest area to be affected.**
- Change in river or/ and stream flow.**
- Disturbance to ecosystem in general**



Ecosystem indicators

- Well-managed landscapes and seascapes are at the basis of sustainable development and human security. They are critical to addressing underlying causes of biodiversity loss, and an essential requirement for meeting the Millennium Development Goals.
- IUCN's work on ecosystem management draws on its [Commission on Ecosystem Management \(CEM\)](#), a global network of experts that is supported by the IUCN [Ecosystem Management Programme \(EMP\)](#) as well as on its regional and global thematic programmes.

Indicators of Ecosystem Status

- **Ecosystem Management assumes that inter-generational sustainability must be a precondition for the continued provision of ecosystem goods and services.**

All of these goods and services derive from a diverse array of functions performed by an ecosystem. However ecosystems have been under great pressure by human activities.

Managing ecosystems effectively thus requires the development of baseline standard against which changes within ecosystems can be measured. This is the first step towards the development of indicators at the ecosystem level.

CEM is working with the [Millenium Ecosystem Assessment Project](#), [Society for Conservation Biology](#) and other partners in developing these indicators of the status of ecosystems around the world.



Indicators of sustainable use of biological diversity (Agenda item 23)

- **Sustainable use of biological diversity is a central objective of the Convention on Biological Diversity (Articles 1 and 10). It is being addressed as a cross-cutting issue under the work programme.**
- **The 6th Conference of the Parties (COP) to the Convention on Biological Diversity (CBD) decided to “... achieve, by 2010, a significant reduction of the current rate of biodiversity loss at the global, regional and national levels...” (decision VI/26). Decision VI/9 provides an initial step to address this goal by establishing the CBD Global Strategy for Plant Conservation. At the World Summit on Sustainable Development in 2002 the world’s leaders agreed to achieve “... a significant reduction in the current rate of loss of biological diversity” by 2010.**



Indicators of sustainable use of biological diversity (Agenda item 23) – (Cont).

- **The *Addis Ababa Principles and Guidelines for Sustainable Use of Biological Diversity* were adopted at the 7th meeting of the Conference of the Parties in 2004 in decision VII/12. They provide a framework for governments to develop and implement policies that will foster sustainable use of biological diversity. They also provide guidance to resource managers on how to enhance the sustainability of their uses of biological diversity.**
- **The World Conservation Union (IUCN) at its 3rd World Conservation Congress in 2004 endorsed the *Addis Ababa Principles* and committed itself to work with the Parties and the Secretariat to further their development and implementation (WWC RES 3.074: *Implementing the Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity*). At COP7 Parties also adopted a *Strategic Plan: Future Evaluation of Progress* (Decision VII/30). The 4th Goal of this Plan addresses the need for uses of biological diversity resources to be sustainable.**

Indicators of sustainable use of biological diversity (Agenda item 23) – (Cont).

- *Three sub-targets were adopted and indicators have been proposed by SBSTTA (Recommendation X/5) See Table 1.*

Sub-Targets	Proposed Indicators
4.1: Biodiversity-based products derived from sources that are sustainably managed and production areas managed consistent with the conservation of biodiversity	Area of forest, agricultural and aquacultural ecosystems under sustainable management.
	Proportion of products derived from sustainable sources.
4.2: Unsustainable consumption, of biological resources, or that impact upon biodiversity, reduced	Ecological footprint and related concepts
4.3: No species of wild flora or fauna endangered by international trade	Change in status of threatened species



Indicators of sustainable use of biological diversity (Agenda item 23) – (Cont).

- *These proposed indicators are at different stages of development and involve several institutions, e.g., the 2010 Biodiversity Indicator Partnership (BIP), FAO, EEA SEBI 2010 (European Union), IUCN, and OECD.*
- *Because of the complex issues that need to be addressed in the development of indicators related to sustainable use, IUCN through the SSC, Sustainable Use Specialist Group (SUSG) and in partnership with the UNEP-World Conservation Monitoring Centre, established an Ad Hoc Working Group on Sustainable Use Indicators to foster closer collaboration and consultation amongst those involved.*
- *The members of the Working Group are: EEA SEBI 2010, FAO, IUCN SSC, IUCN Secretariat, UNEP-CITES Secretariat, UNEPWCMC, Canada, Namibia, United Kingdom, Birdlife International, DICE – Kent University, Diversitas, Fauna and Flora International, Natural History Museum – France, Swedbio, TRAFFIC International, TRAFFIC South America, Wildlife Conservation Society, and the Zoological Society of London.*
- *Four global scale datasets are broadly available that have relevant data and sufficient temporal depth to document changes in status over time:*
 - *IUCN-SSC Red List Database;*
 - *CITES trade-related data;*
 - *The World Database on Protected Areas and*
 - *FAO datasets on fisheries, fish stocks, and forest inventories.*

Indicators of sustainable use of biological diversity (Agenda item 23) – (Cont).

- *International customs records may also be relevant to measure levels of legal use of certain biodiversity resources that are classified as commodities, e.g., gum Arabic, tropical timber, or medicinal plants etc.*

When developing indicators it is important that they be:

- *Scientifically defensible;*
- *Meaningful with the public;*
- *Policy relevant;*
- *Scalable between global, regional and national levels, and*
- *Easy and cost-effective to apply.*

- *Ideally, data should be readily available for compilation and analysis and should be capable of documenting change in the status of biodiversity resources over time..*



Status of biodiversity-related indicators:

- **To achieve the 2010 Target we need to know:**
 - **What is the overall status of biodiversity?**
 - **At what rate is biodiversity being lost?**
 - **Where is biodiversity being lost?**
 - **What are the causes of decline and loss of biodiversity?**



The 2010 Target & Indicators

- Commonly known as the '2010 target', the commitment to "achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on earth" was adopted by over 190 of the world's governments at the meeting of the [Convention on Biological Diversity](#) in 2002, and endorsed later that year by the [World Summit on Sustainable Development](#)



The 2010 Target & Indicators

- In [decision VII/30](#) the Conference of the Parties of the CBD adopted a framework to assess and communicate progress towards the 2010 target at the global scale.
- The framework includes seven focal areas, each of which encompasses a number of indicators for assessing progress towards, and communicating, the 2010 target at the global level.
- In total, 22 indicators were identified by the Conference of the Parties. Thirteen of these are ready for immediate testing, while others require further development, and this distinction is shown below.



Set of 2010 Indicators, presented by Focal Areas of the CBD.

- **To achieve How can we measure the rate of loss of biodiversity?**
 1. Extent of biomes/habitats
 2. Abundance/distribution of species
 3. Threat status of species
 4. Genetic diversity of domesticated animals & cultivated plants
 5. Coverage of protected areas
 6. Area of forest, agricultural and aquaculture ecosystems under sustainable management
 7. Number and cost of alien invasions

Set of 2010 Indicators, presented by Focal Areas of the CBD.

Focal Area	Indicator
1- Status and trends of the components of biodiversity	<u>Trends in extent of selected biomes, ecosystems, and habitats</u>
	<u>Trends in abundance and distribution of selected species</u>
	<u>Coverage of protected areas</u>
	<u>Change in status of threatened species</u>
	<u>Trends in genetic diversity of domesticated animals, cultivated plants, and fish species of major socioeconomic importance</u>

Set of 2010 Indicators, presented by Focal Areas of the CBD.

Focal Area	Indicator
2- Sustainable use	<u>Area of forest, agricultural and aquaculture ecosystems under sustainable management</u>
	<u>Proportion of products derived from sustainable sources</u>
	<u>Ecological footprint and related concepts</u>

Set of 2010 Indicators, presented by Focal Areas of the CBD.

Focal Area	Indicator
3- Threats to biodiversity	<u>Nitrogen deposition</u>
	Trends in invasive alien species

Set of 2010 Indicators, presented by Focal Areas of the CBD.

Focal Area	Indicator
4-Ecosystem integrity and ecosystem goods and service	Marine Trophic Index
	Water quality of freshwater ecosystems
	Trophic integrity of other ecosystems
	<u>Connectivity / fragmentation of ecosystems</u>
	Incidence of human-induced ecosystem failure
	Health and well-being of communities who depend directly on local ecosystem goods and services
	Biodiversity for food and medicine



Set of 2010 Indicators, presented by Focal Areas of the CBD.

5- Status of traditional knowledge, innovations and practices	Status and trends of linguistic diversity and numbers of speakers of indigenous languages
	Other indicator of the status of indigenous and traditional knowledge
7- Status of access and benefits sharing	Indicator of access and benefit-sharing
Statut of resources transferts	Official development assistance provided in support of the Convention
	Indicator of technology transfer

Status of biodiversity-related indicators: 2010

Biodiversity Indicators Partnership (CBDBIP)

- *The Partnership links biodiversity indicators initiatives at national, regional and global scales and will contribute information to a number of international mechanisms and initiatives, including the [Convention on Biological Diversity](#) (and its various programmes of work), the [Ramsar Convention on Wetlands](#), the [Convention on Migratory Species](#), the [Convention on International Trade in Endangered Species](#), and the Millennium Development Goals.*
- *The 2010 Biodiversity Indicators Partnership will continue to meet the needs of users at national and international levels for the best available information on biodiversity trends, and to explore the various ways in which the global indicators can be applied and communicated through to 2010 and beyond.*
- [2010 Biodiversity Indicators Partnership \(list of indicators\)](#)

Note: A set of UNEP/UNSD/AEO indicators are proposed on the hard copy Document

Biodiversity indicators selected

Priority Areas	Agreed Set of ECA Regional Indicators
Ecosystem	Proportion of terrestrial area protected by ecological region [CSD]
Wetlands	Number of wetland species threatened and extinct
	% change of the area of wetlands
	Number of Ramsar sites
	% of rehabilitated/total area of wetlands
	Number of restored wetlands sites
Invasive species	Threatened plant species as a % of total known plant species
	Threatened animal species as % of total known animal species
	Proportion of species threatened with extinction [MDG]
	Abundance of invasive alien species [CSD]



PROPORTION OF TERRESTRIAL AREA PROTECTED, TOTAL AND BY ECOLOGICAL REGION

- **Source:** <http://www.un.org/esa/sustdev/natlinfo/indicators/isd.htm>
- **Proportion of terrestrial area protected by ecological region [CSD]**
- **1. INDICATOR**
- (a) **Name:** Proportion of terrestrial area protected, total and by ecological region
- (b) **Brief Definition:** This indicator can be expressed as the percentage protected of terrestrial surface area.
- The terrestrial area indicator can be disaggregated by country. It may also be possible and desirable to disaggregate both indicators further, for example by protected area category (i.e. using the IUCN protected area management category system).
- This indicator can also be separately expressed as the percentage protected of terrestrial ecological region.
- (c) **Unit of Measurement:** % of total terrestrial area / % of terrestrial ecological region

PROPORTION OF TERRESTRIAL AREA PROTECTED, TOTAL AND BY ECOLOGICAL REGION

- **2. POLICY RELEVANCE**
- **(a) Purpose: The indicator represents the extent to which terrestrial areas important for conserving biodiversity, cultural heritage, scientific research (including baseline monitoring), recreation, natural resource maintenance, and other values, are protected from incompatible uses. It shows how much of each major ecosystem and habitat is dedicated to maintaining its diversity and integrity.**
- **(b) Relevance to Sustainable/Unsustainable Development (theme/sub-theme): Sustainable development depends on a sound environment, which in turn depends on ecosystem diversity. Protected areas are essential for maintaining ecosystem diversity, in conjunction with management of human impacts on the environment.**
- **(c) International Conventions and Agreements: This indicator shows implementation of Article 8(a) of the Convention on Biological Diversity.**

PROPORTION OF TERRESTRIAL AREA PROTECTED, TOTAL AND BY ECOLOGICAL REGION

- **2. (d) International Targets/Recommended Standards:** The international community has committed “to achieve a significant reduction of the current rate of biodiversity loss at the global, regional, and national level as a contribution to poverty alleviation and to the benefit of all life on earth by 2010”. This “2010 Target” was formally adopted by governments at the 6th Conference of the Parties of the Convention on Biological Diversity in 2002, and endorsed later that year at the World Summit on Sustainable Development. The 2010 target, and the targets relating to the general objectives of the CBD, relate specifically to Parties to the Convention on Biological Diversity but could also be used as a guide for non-Party states. The CBD established a target that ‘at least 10% of each of the world’s ecological regions be effectively conserved [by 2010]’.
- **(e) Linkages to Other Indicators:** This indicator is linked to other indicators that have implications for land and resource use. These would include; Forest Area as a % of Land Area, Wood Harvesting Intensity, Area of Selected Key Ecosystems, Ratification of Global Agreements, etc.
- This indicator is also linked to indicators of species diversity and environmental quality. It would be complemented by an indicator measuring trends in the management effectiveness of protected areas.



BIODIVERSITY WETLAND INDICATORS

Priority Areas	Agreed Set of ECA Regional Indicators
Wetlands	Number of wetland species threatened and extinct
	% change of the area of wetlands
	Number of Ramsar sites
	% of rehabilitated/total area of wetlands
	Number of restored wetlands sites

A photograph of two elephants in a natural setting, with their trunks touching. The word 'THANKS' is overlaid in a white box with yellow text.

THANKS

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