Convention on Biological Diversity

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Introduction to the ecosystem approach

The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. It is based on the application of appropriate scientific methodologies focused on levels of biological organization which encompass the essential processes, functions and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of ecosystems. The ecosystem approach builds on the following 12 principles that are complementary and interlinked.

Principles

1. The objectives of management of land, water and living resources are a matter of societal choices.

Different sectors of society view ecosystems in terms of their own economic, cultural and society needs. Indigenous peoples and other local communities living on the land are important stakeholders and their rights and interests should be recognized. Both cultural and biological diversity are central components of the ecosystem approach, and management should take this into account. Societal choices should be expressed as clearly as possible. Ecosystems should be managed for their intrinsic values and for the tangible or intangible benefits for humans, in a fair and equitable way.

2. Management should be decentralized to the lowest appropriate level.

Decentralized systems may lead to greater efficiency, effectiveness and equity. Management should involve all stakeholders and balance local interests with the wider public interest. The closer management is to the ecosystem, the greater the responsibility, ownership, accountability, participation, and use of local knowledge.

3. Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.

Management interventions in ecosystems often have unknown or unpredictable effects on other ecosystems;

therefore, possible impacts need careful consideration and analysis. This may require new arrangements or ways of organization for institutions involved in decision-making to make, if necessary, appropriate compromises.

4. Recognizing potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context. Any such ecosystem-management programme should:

a. Reduce those market distortions that adversely affect biological diversity;
b. Align incentives to promote biodiversity conservation and sustainable use;
c. Internalize costs and benefits in the given ecosystem to the extent feasible.

The greatest threat to biological diversity lies in its replacement by alternative systems of land use. This often arises through market distortions, which undervalue natural systems and populations and provide perverse incentives and subsidies to favor the conversion of land to less diverse systems.
Often those who benefit from conservation do not pay the costs associated with conservation and, similarly, those who generate environmental costs (e.g. pollution) escape responsibility. Alignment of incentives allows those who control the resource to benefit and ensures that those who generate environmental costs will pay.

5. Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach.

Ecosystem functioning and resilience depends on a dynamic relationship within species, among species and between species and their abiotic environment, as well as the physical and chemical interactions within the environment. The conservation and, where appropriate, restoration of these interactions and processes is of greater significance for the long-term maintenance of biological diversity than simply protection of species.

6. Ecosystem must be managed within the limits of their functioning.

In considering the likelihood or ease of attaining the management objectives, attention should be given to the environmental conditions that limit natural productivity, ecosystem structure, functioning and diversity. The limits to ecosystem functioning may be affected to different degrees by temporary, unpredictable of artificially maintained conditions and, accordingly, management should be appropriately cautious.

7. The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.

The approach should be bounded by spatial and temporal scales that are appropriate to the objectives. Boundaries for management will be defined operationally by users, managers, scientists and indigenous and local peoples. Connectivity between areas should be promoted where necessary. The ecosystem approach is based upon the hierarchical nature of biological diversity characterized by the interaction and integration of genes, species and ecosystems.

8. Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term.

Ecosystem processes are characterized by varying temporal scales and lag-effects. This inherently conflicts with the tendency of humans to favour short-term gains and immediate benefits over future ones.

9. Management must recognize that change is inevitable.

Ecosystems change, including species composition and population abundance. Hence, management should adapt to the changes. Apart from their inherent dynamics of change, ecosystems are beset by a complex of uncertainties and potential "surprises" in the human, biological and environmental realms. Traditional disturbance regimes may be important for ecosystem structure and functioning, and may need to be maintained or restored. The ecosystem approach must utilize adaptive management in order to anticipate and cater for such changes and events and should be cautious in making any decision that may foreclose options, but, at the same time, consider mitigating actions to cope with long-term changes such as climate change.

10. The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity.

Biological diversity is critical both for its intrinsic value and because of the key role it plays in providing the ecosystem and other services upon which we all ultimately depend. There has been a tendency in the past to manage components of biological diversity either as protected or non-protected. There is a need for a shift to more flexible situations, where conservation and use are seen in context and the full range of measures is applied in a continuum from strictly protected to human-made ecosystems

11. The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.

Information from all sources is critical to arriving at effective ecosystem management strategies. A much better knowledge of ecosystem functions and the impact of human use is desirable. All relevant information from any concerned area should be shared with all stakeholders and actors, taking into account, inter alia, any decision to be taken under Article 8(j) of the Convention on Biological Diversity. Assumptions behind proposed management decisions should be made explicit and checked against available knowledge and views of stakeholders.

12. The ecosystem approach should involve all relevant sectors of society and scientific disciplines.

Most problems of biological-diversity management are complex, with many interactions, side-effects and implications, and therefore should involve the necessary expertise and stakeholders at the local, national, regional and international level, as appropriate.

A more in depth introduction to each of the principles, including implementation guidelines can be found here:

In English: *http://www.cbd.int/doc/publications/ea-text-en.pdf*
In French: *http://www.cbd.int/doc/publications/ea-text-fr.pdf*
In Spanish*: http://www.cbd.int/doc/publications/ea-text-es.pdf*

The same publication also includes a consideration of **the relationship between sustainable forest management and the ecosystem approach**. For further reading on that subject you may also look at the following publication building on a study undertaken by the International Union of Conservation (IUCN), The Programme for Forest (PROFOR) and The World Bank.

In English: *http://data.iucn.org/dbtw-wpd/edocs/arborvitae_changing_realities.pdf*

The International Union of Conservation (IUCN) has organized the **principles into the five following steps** to implement the ecosystem approach:

Step A, Determining the main stakeholders, defining the ecosystem area, and developing the relationship between them

Step B, Characterizing the structure and function of the ecosystem, and setting in place mechanisms to manage and monitor it

Step C, Identifying the important economic issues that will affect the ecosystem and its inhabitants

Step D, Determining the likely impact of the ecosystem on adjacent ecosystems

Step E, Deciding on long-term goals, and flexible ways of reaching them

You can **read more about the five steps**, including suggested actions and case studies here:

In English: *http://data.iucn.org/dbtw-wpd/edocs/CEM-003.pdf*
In Spanish: *http://data.iucn.org/dbtw-wpd/edocs/CEM-003-Es.pdf*

The ecosystem approach is a tool; it provides a framework that can be used to implement the objectives of the Convention on Biological Diversity. There is no single correct way to apply the ecosystem approach. The principles that underlie the ecosystem approach can be translated flexibly to address management issues in different social, economic and environmental contexts. There are a number of options for implementing the ecosystem

approach. For example, the principles can be included in national and regional policies, planning processes and sectoral plans. The principles can also be applied at a local level to smaller projects.

For further reading on how to use the ecosystem approach you can download **the beginners guide**.

In English: *http://www.cbd.int/doc/programmes/cro-cut/eco/eco-guide-be-en.pdf*

The SCBD has also developed a not exhaustive **list of tools and approaches** one may use to meet the ecosystem approach principles that can be found here: *http://www.cbd.int/ecosystem/sourcebook/tools/*

For a more in depth explanation, guidelines and tools you can download the **advanced user guide**.

In English: *http://www.cbd.int/doc/programmes/cro-cut/eco/eco-guide-ad-en.pdf*

To get updated info about how to apply the ecosystem approach you can subscribe to and find earlier editions of **the ecosystem approach newsletter** *here: http://www.cbd.int/ecosystem/ea-newsletters/*

There is also information available about concrete cases that you can find by searching in the **Ecosystem Approach Case Study Database**

In English: *http://www.cbd.int/ecosystem/sourcebook/search/*