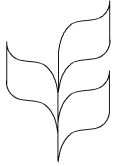




CBD



**CONVENTION ON
BIOLOGICAL DIVERSITY**

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CONFERENCE OF THE PARTIES TO THE
CONVENTION ON BIOLOGICAL DIVERSITY

Fourth meeting

Bratislava, Slovakia

4 to 15 May 1998

Item 13 of the provisional agenda

(Review of the operations of the Convention:

Longer-term programme of work)

Report of the Workshop on the Ecosystem Approach

Lilongwe, Malawi, 26 - 28 January 1998

Submission by the Governments of the Netherlands and Malawi

I. Introductory Remarks

1. Due to the initiative and generous support of the Governments of Malawi and the Netherlands, a CBD-Workshop on the Ecosystem Approach was held in Lilongwe, Malawi, from 26 to 28 January 1998. The Workshop was formally opened by Honorable F.V. Mayinga Mkandawire, M.P., Minister of Forestry, Fisheries and Environmental Affairs. The Minister underscored the importance of the process to discuss the ecosystem approach for the implementation of the Convention. Prof. Dr. Herbert Prins welcomed the participants on behalf of the Government of the Netherlands and expressed his satisfaction that the participants were eminent scientists who were so willing to share their thoughts on the difficult issue of the ecosystem approach. The Workshop was co-chaired by Prof. Dr. Herbert Prins and Prof. Dr. James Seyani from Malawi.

2. The debate was initiated by introductory remarks of Dr. Francesco Mauro in which he provided a short history of what is now referred to as the "ecosystem approach" in the process of the Convention on Biological Diversity (CBD).

3. The Convention on Biological Diversity defines in Article 2 an ecosystem as "*a complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.*" The ecosystem is one aspect of biological diversity which means "*the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems*" (Article 2).

4. The Convention states that "the fundamental requirement for the conservation of ecosystems and natural habitats is the *in-situ* conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings" (Preamble). *In-situ* conservation (Article 8) is complemented by the promotion of *ex-situ* conservation (Article 9). These provisions provided together with the three objectives of the Convention - the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits arising out of the use of genetic resources (Article 1) - and other relevant preambular statements provided the basis for the Conference of the Parties (COP) and its Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) to elaborate on what is now referred to as "the ecosystem approach".

5. The importance of an ecosystem approach in addressing biological diversity was directly or indirectly confirmed on several occasions, starting with the first two meetings of the SBSTTA in 1995 and 1996. At the second meeting of the SBSTTA the ecosystem approach was explicitly mentioned and, thereafter, the third meeting of the COP underscored the importance of regional and ecosystem approaches for the development of guidelines and indicators. As it is well known, the SBSTTA has decided that a main theme should be considered, together with cross-cutting issues, at each of its meetings. Thus, the following thematic areas have been discussed so far: marine and coastal, agricultural, forest, and inland water biological diversity. All these themes, which are not at all equivalent to ecosystems but rather clusters to facilitate discussions, have been considered according to a sort of ecosystem approach and, in several occasions, the approach and the consequent indications for action were endorsed by the COP. In all instances, the

approach has been indicated although the terminology used varied: "ecosystem approach", "ecosystem process-oriented approach", "ecosystem management approach", "ecosystem-based approach" etc.

6. In order to develop a common understanding of the ecosystem approach, the Secretariat organized an informal discussion, held as a side-event at the third meeting of the SBSTTA in September 1997 in Montreal. In that occasion, where a draft discussion paper was provided as "provocative" background material, there was consensus among all participants that a discussion within the process of the CBD should be urgently initiated as there is a broad range of views about the meaning, scope and elements of the approach. At that meeting, several problems were highlighted that need further discussion: terminology, types of ecosystems ("natural" vs. "man-modified"), underlying theoretical assumptions, relation between ecosystem approach and ecosystem management, problems of methodology, need for case studies, implications for the implementation of the CBD with special reference to its *modus operandi* and the legal implications. In conclusion, the participants to that meeting suggested that a process should be initiated to foster the discussion about the meaning and the elements/principles of the ecosystem approach in the CBD, and that such a discussion should be reflected in an information document to be presented possibly at the fourth meeting of the COP, to be held from 4 to 15 May 1998 in Bratislava, Slovakia, as a basis for further discussion and elaboration. The present workshop is the result of that suggestion and of the initiative by the CBD-Secretariat to ensure an advancement of the debate on the ecosystem approach.

7. During the three-day meeting which included an evening session, the participants discussed what they thought an ecosystem approach should be and why an ecosystem approach should be taken to implementing the Convention. After discussing those two questions, the focus laid on the third question: What are the principles of an ecosystem approach? The participants considered that question as the most important one.

II. Findings of the Workshop

1. What is an ecosystem approach?

8. Taking the provisions of the Convention and the deliberations within the process of the Convention into account, the participants of the Workshop developed the following description of the approach:

The ecosystem approach is based on the application of appropriate scientific methodologies focused on levels of biological organization which encompass the essential processes and interactions amongst organisms and their environment. The ecosystem approach recognizes that humans are an integral component of ecosystems.

9. The ecosystem approach can be considered as a framework for analysis and implementation of the objectives of the CBD.

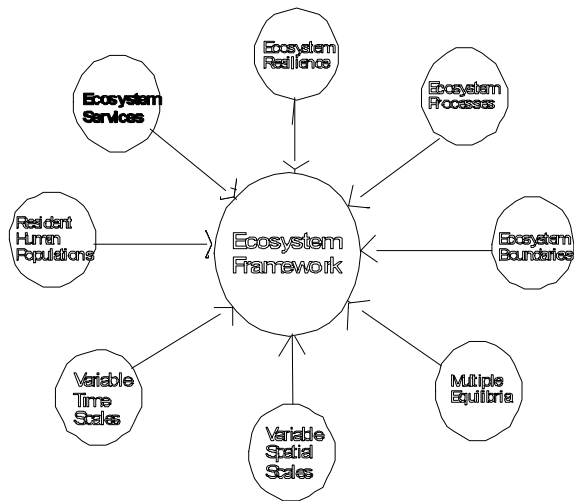


Fig. 1: Ecosystem Framework

Conceptual Framework for Ecosystem Management

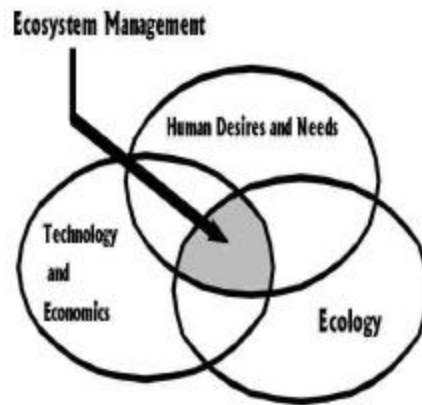


Fig. 2 : Venn Diagram

10. In elaborating on and applying the ecosystem approach, the following elements should be borne in mind:

(a) original meaning of "ecosystem" in order to avoid a misconception as a unit of a particular scale such as habitat, biotope or biome;

THE HIERARCHICAL AND NESTED NATURE OF ECOSYSTEMS

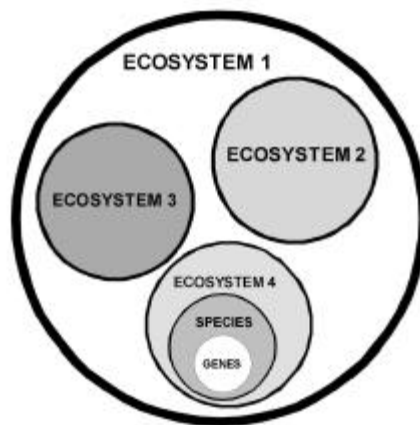


Fig. 3 Ecosystems

(b) the problem/question should determine the scale to which the ecosystem approach is applied

- (c) "ecological" reasoning includes the following elements:
- non-linearity
 - functioning
 - interconnectedness
 - the human dimension
 - adaptability/resilience (as opposed to stability)

11. Ecosystems are complex, non-linear and the outcomes of processes often show time lags. Further properties of ecosystems are discontinuities, thresholds, resilience and interconnectedness of which humans are part. Since ecosystems are dynamic, they contain elements of surprise and uncertainty. Management needs to be adaptive to allow for testing of management policies and emphasizes learning-by-doing.

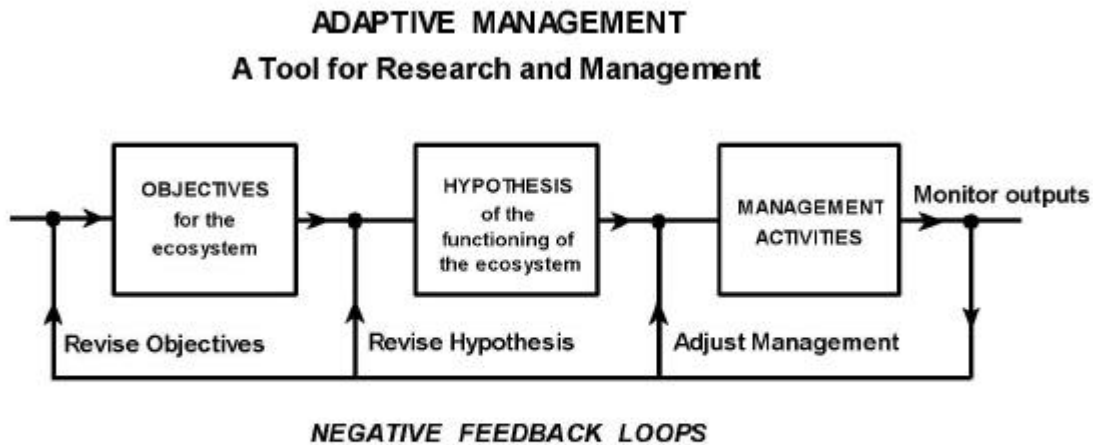


Fig. 4 Adaptive Management

12. It was debated whether the term "ecosystem approach" was not preferable to "ecosystem-based approach" given the above considerations. The ecosystem concept and its underlying principles are primarily a basis for development of a management methodology for particular areas of land or water rather than a focus on any particular ecosystem as it might be implied by the term "ecosystem approach". The term "ecosystem-based approach" would reflect better the particular type of reasoning and analysis to tackle the objectives to implement the Convention. However, as the term "ecosystem approach" has been used throughout the discussions within the Convention, it was felt that it was advisable to continue to use this term.

13. As summarized in the introductory remarks, the COP and SBSTTA have discussed and decided upon various thematic areas. The ecosystem approach should be applied throughout all these and future thematic areas.

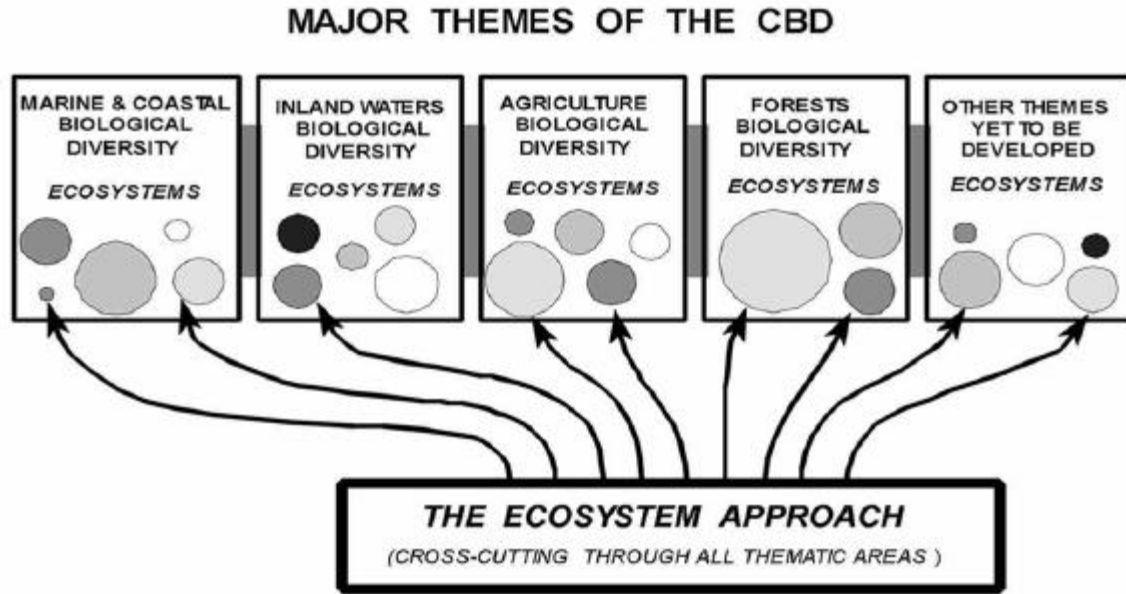


Fig. 5 Thematic areas and the ecosystem approach

2. Why should we take an ecosystem approach?

14. Classical nature conservation approaches have limitations as the sole tool for management of biological diversity and frequently but not always display one or more of the following characteristics:

1. Insufficient recognition that ecosystem functioning is vitally important for people, biological diversity and overall environmental quality;
2. Management is too site-specific and does not take into consideration the interlinkage with other sites;
3. Lack of an integrated consideration of nature and culture;
4. Too much emphasis on either the species characteristics (uniqueness, rarity) or on establishing protected areas;
5. Too little emphasis on the fact that the major part of the world's biological diversity lies outside protected areas;
6. Not all stakeholders in the management of any given ecosystem might be involved to a sufficient degree or in an integrated manner;
7. Inappropriate assignment of costs and benefits, due to market distortion and failure, perverse incentives and lack of consideration of the values of public goods and services from ecosystems;
8. A failure to integrate or coordinate with other sectoral interests. Agriculture, environment, forestry, fisheries, health, planning etc., including nature conservation, are often managed separately by different governmental bodies or others in a non-integrated way which is often to the detriment of biological diversity and people.

15. In order to overcome those shortcomings and deficiencies, an ecosystem approach should be taken, *inter alia*, for the following reasons:

1. The ecosystem concept helps to define the appropriate management level to meet the three objectives of the Convention.
2. Functioning ecosystems are indispensable for the survival of human beings and future generations as well as the global environment, as the Convention recognizes the intrinsic value of biological diversity.
3. Biological diversity is inextricably linked to ecosystem processes, functioning and resilience.
4. Ecosystem understanding allows effective or sustainable use.
5. People frequently move among ecosystems, and often use different ecosystems to satisfy their needs.
6. Humans are frequently seen as external to ecosystems even when they are residents within them.
7. The ecosystem approach allows the use of both indigenous and local knowledge, innovations and practices including traditional management systems and scientific thinking.
8. Place appropriate emphasis on the range of goods, services and information which ecosystems provide to humanity, including
 - food
 - construction materials
 - medicines, biochemicals and genetic information for pharmaceuticals
 - wild genes for domestic plants and animals
 - tourism and recreation
 - maintaining hydrological cycles
 - cleansing water and air
 - maintaining the gaseous composition of the atmosphere and regulating climate
 - pollinating crops and other important plants
 - generating and maintaining soils
 - storing and cycling essential nutrients
 - absorbing and detoxifying pollutants of human origin
 - satisfying spiritual and cultural needs
 - providing sources of beauty and inspiration
 - providing opportunities for research

3. What are the principles of an ecosystem approach ?

16. As they are all complementary and interlinked, the principles below need to be read in conjunction with each other. Together they characterize the ecosystem approach.

17. All involved in implementing the ecosystem approach should remain accountable to their constituencies for the consequences of management actions. The ecosystem approach should include a system of accountability that addresses performance of managers and decision-makers, and achievement of management objectives. Management actions should strive for efficiency, effectiveness and equity. They should be taken with precaution.

1. **Management objectives are a matter of societal choice.**

Rationale :

Different sectors of society view ecosystems in terms of their own economic, cultural and social needs. Ultimately, all ecosystems are managed for the benefit of humans - whether that benefit is consumptive or non-consumptive.

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

Rationale:

Decentralized systems can lead to greater efficiency, effectiveness and equity. The closer the management is to the ecosystem, the greater is the responsibility, 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.

Rationale:

Management interventions in ecosystems often have unknown or unpredictable effects on other ecosystems and therefore need careful consideration and analysis. This may require institutions for decision-making which lead to appropriate compromises and trade-offs.

4. Recognizing potential gains from management there is a need to understand the ecosystem in an economic context. Any ecosystem management program should

- (a) reduce those market distortions that adversely affect biological diversity;**
- (b) align incentives to promote sustainable use;**
- (c) internalize costs and benefits in the given ecosystem to the extent feasible.**

Rationale:

(1) The greatest threat to biological diversity lies in its replacement by alternate 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.

(2) 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. A key feature of the ecosystem approach includes conservation of ecosystem structure and functioning.

Rationale:

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

biological diversity than simple protection of species.

6. Ecosystems must be managed within the limits to their functioning.

Rationale:

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

7. The ecosystem approach should be undertaken at the appropriate scale.

Rationale:

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, and scientists. 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 which characterize ecosystem processes, objectives for ecosystem management should be set for the long term.

Rationale :

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

9. Management must recognize that change is inevitable.

Rationale:

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. 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 with may foreclose options.

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

Rationale:

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 is seen in context and

the full range of measures are 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.**

Rationale:

Information from all sources is critical to arriving at effective ecosystem management strategies.

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

Rationale:

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.

4. Conclusions and Recommendations:

18. The participants of the Workshop conclude that these 12 principles provide a good basis for discussion and suggest them to the CBD community (Parties, international organizations, non-governmental organizations, representatives of local and indigenous communities and non-parties) and the scientific community at large for further discussion and elaboration. The principles will have to be taken from a conceptual realm and made operational. Furthermore there are many dilemmas involved in establishment of management objectives between stakeholders within an area, between local communities and central authorities, between a managed area and areas outside etc. Procedures and methodologies for arriving at balanced trade-offs are necessary.

19. The participants of the Workshops offer their findings on the concept of the ecosystem approach and its principles to the fourth meeting of the Conference of the Parties to be held in Bratislava from 4 to 15 May 1998 as a basis for initial consideration of the ecosystem approach. This report should be circulated by the Clearing-house mechanism so that further discussion is fostered.

20. The Conference of the Parties might wish to give a mandate for further work to the SBSTTA and include the ecosystem approach into the medium and long-term programme of work. This work should also be carried out through intersessional activities.

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Annex B:

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Annex C

Rationale of the Workshop

The discussion on how to manage biological diversity and the natural environment is increasingly being conceived as best being dealt with through an "ecosystem approach". As the development of such an approach is still in its infancy, there is a need for discussion on what it means for the Convention on Biological Diversity. Within the process of the CBD there is a need for discussion about the meaning of an "ecosystem approach" for the implementation of the objectives of the Convention.

The workshop in Lilongwe, Malawi, from the 26 to 28 January 1998 is, after the informal workshop at the third meeting of the SBSTTA, the second activity in the process of the CBD on the ecosystem approach. The convenors of the workshop seeks advice from the participants of the workshop on the meaning and implications of the ecosystem approach in the Convention. Advice is sought about key questions related to the ecosystem approach (what lessons can be drawn from existing case studies; what is an ecosystem; why to take an ecosystem approach and what does it imply; on which scale is integrated decision making possible; what are possible guidelines for an ecosystem approach). The workshop will provide a report for the fourth Conference of the Parties which will meet in Bratislava, Slovakia, from 4 to 15 May 1998. It will be presented to the Executive Secretary of the Convention and made available on the Internet. The report will be distributed as an information document at COP4 and feed into the discussions on the *modus operandi* and the medium and longer term programme of work in the CBD. The workshop shall initiate a broader discussion involving all stakeholders of the CBD community with the aim to further the regime building process in the Convention and to help implementing its three objectives.