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REGIONAL WORKSHOP ON SUSTAINABLE USE
OF BIOLOGICAL DIVERSITY
Second meeting
Hanoi, Vietnam
9 to 12 anuary 2002

Framework for the development of elements for guidelines for sustainable use of biological diversity as a cross-cutting issue

Note by the Executive Secretary

INTRODUCTION

1. This paper – the same document as used wor the Maputo workshop - describes the purpose and approach of the second regional Workshop on sustainable use of biological diversity, to be held in Hanoi, Vietnam, from 9 to 12 January 2002. It outlines:

(a) The purpose and scope of the workshop
(b) The information inputs that form the starting point;
(c) The intended output of the Workshop; and
(d) The process for generating these outputs.

I. PURPOSE AND SCOPE OF THE WORKSHOP

2. The purpose of the workshop is to identify elements for guidelines for the sustainable use of biological diversity in accordance with decision V/24 of the Conference of the Parties to the Convention on Biological Diversity (COP). In this decision the COP requests the Executive Secretary "to assemble practical principles, operational guidelines and associated instruments, and guidance specific to sectors and biomes, which could assist Parties and Governments to develop ways to achieve the sustainable use of biological diversity, within the framework of the ecosystem approach".

3. This regional workshop on sustainable use is the second one in a series of three regional workshops on sustainable use of biological diversity to be organized in collaboration with Wageningen University, and with the financial support of the Government of The Netherlands. It will focus on sustainable use of forest biodiversity, including timber and non-timber forest resources (NFTR).

4. The first regional workshop highlighted elements related to the sustainable use of terrestrial, dryland resources and game utilization, held in Maputo, Mozambique. The output of this meeting was reported to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) at its seventh session in

November 2001 in document UNEP/CBD/SBSTTA/7/INF 9. The third workshop, to be held in Ecuador in February or March 2002, will focus on marine and freshwater capture fisheries. The output of the second and third workshops will be reported to COP 6. A substantive discussion on this issue will take place in SBSTTA 8 or 9.

5. The elements for the guidelines on sustainable use to be developed in these three regional workshops will provide technical guidance to policy-makers, decision-makers and managers with responsibilities covering the tenure and resources of biodiversity, whether in national or local government, the private sector, indigenous and local communities, non-governmental organizations or other organizations, on ways of working together with key stakeholders. They will build on principles and concepts that have already been established through international processes.

Contents

II. WORKSHOP INFORMATION INPUTS

A. Information inputs as starting points

6. Three main sources of information will need to be taken into account in the development of international guidelines for sustainable use:

(a) Case-studies on best practices and lessons learned from the sustainable use of biological diversity under the thematic areas of the convention; the various case studies on best practices and lessons learned show so far that sustainable use is still not common practice, but slowly being introduced in the various thematic areas under the Convention. They further indicate that sustainable use is not remote in either relevance or practicality but that it could be achieved by building on present mechanisms and policies. Sustainable use applied in some thematic areas is more broadly implemented than in others; for example sustainable use in dryland biodiversity remains still in the initial stages; it is also evident that sustainable use should be supported by mechanisms initiated by practical principles or operational tools. In fact, effective implementation of the provisions of the CBD relating to sustainable use at the national level will largely depend on the practical interpretation of the Articles and definition utilized in the convention.

Main observations so far are:

(i) As a practical definition of sustainable use could be applied:
Use [1]of a living resource [2)] [2]is sustainable if and when the human induced mortality [3)] [3](or decrease) plus the natural mortality is equal to the recruitment [4)] [4]so that the population numbers [5](or stock) are constant over time [6]and above the threshold prescribed for a minimum viable population [7]and above any other threshold that may be societally desirable 8);[8]

(ii) A complex interactive set of political, social, economic and biological factors, which vary according to region and culture, influence the sustainable use of biological resources;

(iii) Relevant management frameworks and appropriate management tools are crucial for maintaining sustainability of resource use;

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1 Use: may mean consumptive use but also non-consumptive use is included;
2 Living resource: CBD only deals with living resources (plants, animals and micro-organisms;
3 Human induced mortality: this includes harvesting, fishing, hunting etc., but also impact through other activities; it thus includes any negative effect on population numbers or vegetation biomass;
4 Recruitment: recruitment includes natality and vegetative growth; in age-structured populations this is more complicated than in annually reproducing resources;
5 Population numbers: with some resources this termed “stock” and in other resources the term “biomass” or even “vegetation cover” may apply;
6 Constancy over time: the population fluctuations should not be too excessive;
7 Minimum viable population (MVP): from a nature conservation point of view the concept of minimum viable population is hard and fast; the exact threshold per population is not but should be in the order of 50,000 individuals; for a fragmented population this MVP applies to each fragment;
8 Societal needs: it may be desirable to have larger populations than the minimum viable population, for example when larger stock gives a higher sustained yield or when a higher vegetation cover gives better protection against erosion.

(iv) Managing for sustainability should contain:

- Adaptive management;
- Monitoring and feedback mechanisms;
- Appropriate harvest methods;
- Information requirements;
- Trans-boundary, international and global tenure;
- Access and accountability;
- Institutional needs to adequately manage the resource at place.

(b) The ecosystem approach of the Convention on Biological Diversity

The principles and operational guidance elements of the ecosystem approach have also been analyzed. The key conclusions from this analysis in relation to sustainable use, are as follows:

(i) development should not take place without adequate baseline research and information, and environment impact assessments;

(ii) setting objectives for sustainable use is a matter of societal choices and should be decentralized to the lowest appropriate level, with involvement and participation of all stakeholders;

(iii) a broad consensus relative to planning and management of sustainable use by all stakeholders is the basis for future and long-term success;

(iv) ecosystems are important in providing the quality environments. A balanced co-existence needs to be achieved between the use and the conservation of ecosystems, and development of any activities, in all areas;

(v) regular monitoring is important in adjusting management to ensure that activities are sustainably used and remain in balance

(vi) equitable sharing of benefits with host communities, especially indigenous and local communities is an important part of the management and sustainable use of ecosystems;

(vii) local people should be empowered to be involved in the planning and management of sustainable use activities, through capacity-building and by creating a strong framework for decision-making incorporating public participation of the broider community;

(c) Other relevant information

Relevant information from the different stakeholders addressing their responsibilities in relation to sustainable development, ecosystem management, and biodiversity conservation and sustainable use should also be taken into account.

B. Existing principles, operational guidelines and associated instruments, and guidance specific to sectors and biomes

7. As part of the preparations, an analysis of the principles, operational guidelines and associated instruments, already available, will be undertaken:

(a) Contributions on the development of practical principles, operational guidelines, associated instruments and guidance specific to sectors and biomes;

An INF document will be prepared for SBSTTA 7, to be held from 12 to 16 November 2001 in Montreal.

(b) Review of the various initiatives in this field;

For the purpose of the workshop the following principles are used as background:

(i) the Principles of Sustainable Use by IUCN (Annex I);

(ii) the White Oak Principles, developed in January 2001 in Florida by IUCN (Annex II);

(iii) Sustainable Use within an Ecosystem Approach by IUCN (Annex III).

(c) Review on the issue carried out by other organizations, such as , UNEP, WWF, UNEP, FAO, Ramsar and others;

For the purpose of the workshop the following sources of information will need to be taken into account:

(i) FAO

- Code of conduct for Responsible Fisheries and guidelines; http://www.fao.org/fi/agreem/codecond/codecon.asp ;
- International Code of Conduct on the Distribution and Use of Pesticides; http://www.fao.org/waicent/FaoInfo/Agricult/AGP/AGPP/Pesticid/Code/PM_Code.htm ;
- IPPC guidelines for pest risk analysis etc;
- ICES/European Fisheries Advisory Commission Code of Practice on Species Introductions;
- OIE International health Code, Manual of Standards for Diagnostic Tests and Vaccines. http://www.oie.int/eng/normes/mcode/a_summry.htm ;

(ii) RAMSAR's Wise Use of Wetlands

(iii) WWF

- Forest certification work; www.panda.org/forests4life/certify_promo.cfm
- Fisheries certification; www.panda.org/endangeredseas/initiatives/create.cfm

- The people and plants initiative;
  www.rbgkew.org.uk/peopleplants/about.htm
- Forest Steward Council (FSC)
  http://www.fscoax.org/principal.htm
- Marine Stewardship Council (MSC)
  http://www.marine.gov.uk/index.html
- Marine Aquarium Council
  http://www.aquariumcouncil.org/

(iv) UNESCO

- World Heritage Convention;
  http://www.unesco.org/whc/nwhc/pages/home/pages/homepage.htm
- Man and the Biosphere Reserves.
- http://www.unesco.org/mab/wnbr.htm

(v) CITES

- Sustainable use of wild species- a guide for decision-makers.
  http://cites.org
- Traffic
  http://www.traffic.org

(vi) Others

III. PROPOSED OUTPUT FROM THE WORKSHOP

A. Development of elements for guidelines

8. The elements for the guidelines to be prepared by the Workshop should provide a more detailed framework for implementation of agreed principles and concepts, as well as general guidance on priorities and available tools for implementation.

B. Management framework elements

9. Based on analysis of existing international principles and guidelines already available on sustainable use as a cross-cutting issue, and on management of biodiversity and on the provisions of the Convention on Biological Diversity, it is suggested that the following sequence of management steps (to be developed further) could provide a basis for management of sustainable use:

(a) Baseline information;
(b) Vision and objectives;
(c) Targets;
(d) Monitoring and feedback.

C. Management elements

10. A first description of best practices and lessons learned from the application of the tools of sustainable use in the various work programmes of the thematic areas of the convention is resulting in the following elements for sustainable use of living resources:

(a) Modeling;
(b) Planning tools;
(c) Conservation;
(d) Access and accountability;
(e) Harvesting methods;
(f) Education and public awareness;
(g) Institutional and capacity building.

IV. WORKSHOP PROCESS

A. Workshop process for generating output

11. The workshop will be structured around the consideration of how to develop these and other elements for guidelines considered from the different dimensions.

12. The tasks of the Workshop will therefore be to develop a matrix, which will be used to structure the discussions throughout the workshop, and to record conclusions.

The workshop will address following questions in sequence:

(a) Which elements are of importance for the guidelines ?
(b) How can these elements be implemented ?
(c) Which stakeholders have responsibility for implementation of these elements/guidelines ?

B. Dimensions

13. Sustainable use is based on three dimensions of resource utilization, and has one overarching dimension.

a. Dimensions of resource utilization

14. To get a better picture of the concept of sustainability, one main leading question for the three dimensions is formulated, followed by more specified ones.

(1) Resources

15. With as leading question: “to what extent does the resource stand exploitation ?”

(a) what is the growth rate (of accumulation) of the resource, and how is this affected by harvest regime, density or other factors ?

(b) how does the resource manage under competition with other resources ? for example: does the harvest rate of one resource affect the occurrence of another one ?

(c) what is the effect of environmental conditions on the rate of accumulation or growth rate of the resource ?

(d) how can resources be “restored” to harvestable levels ?

(2) Economical

16. With as leading question: “how is the benefit/cost ratio for exploiting the resources?”

(a) what is the effect of demand on the resource stock, and how do market-forces affect the harvest rates of the resource ?

(b) how does ownership affect exploitation strategy and thus resource dynamics ?

(c) how does the availability of funds for investments affect the marketing and harvesting regime ?

(3) Social

17. With as leading question:” who does benefit, and who is bearing the costs ?”

(a) what is the effect of social organization on resource exploitation ?

(b) how do institutions affect resource exploitation ?

(c) how does legislation and control affect resource exploitation ?

b. Overarching dimension of scale

(a) how do fragmentation and connectedness affect population dynamics and resilience of the resource ?

(b) how does market size and thus the market depend on scale ?

(c) how does transport and the ease of transport affect the price of the resource ?

(d) what is the effect of socio-economical inequalities (periphery versus center, social stratification?

18. Only when conditions on all three dimensions of sustainability have taken the right proportion (size or value), and when the resource exploitation has found the proper scale, there is a chance of sustainable use of a resource. In other words, there is a whole array of conditions under which resources use is not sustainable and another array of conditions under which resource use can be sustainable. As most resource use is non-sustainable, it is likely that the latter array encompasses a much smaller universe than the array under which resource use is non-sustainable.

C. Elements for guidelines to be developed

19. To assist the Workshop discussions the following elements for guidelines for sustainable use of biological diversity are presented.

D. Management Framework elements:

Baseline information

20. Baseline information is necessary to enable informed decisions to be taken on the issue. For sustainable use the baseline information could include information on:

(a) existing economic, social and environmental conditions at national and local level;
(b) trends at regional, national and international level;
(c) environmental and biodiversity resources;
(d) national biodiversity strategy and action plans;
(e) national and regional development plans;
(f) information on traditional knowledge as well as scientific information.

21. The baseline information available will need to be reviewed, and where necessary, further research and information gathering can be undertaken to fill gaps that may be identified. All relevant stakeholders may contribute to this process, including biodiversity managers and indigenous and local communities.

Vision and Objectives

22. An overall vision and objectives for sustainable use of biodiversity is relevant for the effective and efficient management. The vision and objectives should take into account national and regional sustainable development plans for economic and social development and for land-use, as well as the baseline information and review. All relevant stakeholders should be involved, especially indigenous and local communities.

23. Governments will coordinate this process at national level. This process should also be undertaken at more local levels by local governments and by communities at community level.

24. Sustainable and non-sustainable use can also be carried out by private industry and individuals.

Targets

25. The main constraint in making resource use sustainable is that targets are set in general qualitative terms without quantifying targets for various elements in more detail. To rectify this, it is important to have (1) an operational but general definition of sustainable use, (2) a definition specifically aimed at the resource to be sustainably managed, and (3) within that specific definition a set of parameters that could be measurable and quantifiable. That means also that (4) the desired output and costs should be defined, (5) that ownership and accountable controller have been identified, and (6) that the specific population or geographically defined ecosystem or parts of an ecosystem should be known before the management starts.

26. For purpose of discussion, the general and operational definition of sustainable use is repeated here:

> "*Use of a living resource is sustainable if and when the human induced mortality (or decrease) plus the natural mortality is equal to the recruitment so that the population numbers (or stock) are constant over time and above the threshold prescribed for a minimum viable population and above any other threshold that may be societally desirable*".

27. A specific and targeted form would read in case of a specific example of, say, an impala population in the Simanjiro Plains of northern Tanzania (assuming it is resident) as:

> "*Use of the impala population of the Simanjiro Plains,* owned by the United Republic of Tanzania *(*bounded by the line between Oljoro Wells and Naberera in the south, the eastern boundary of Tarangire NP in the wet, and further by the road from this park, via Lobisoret to Naberera*) is sustainable if and when the human induced mortality* by (a) the licensed hunting companies, (b) the local people, and (c) any illegal offtake *plus the natural mortality (*to be determined*) is equal to the recruitment (*to be determined*) so that the population numbers (or stock) are constant over time (*to be determined by annual censuses at the end of the dry season*) and above the threshold prescribed for a minimum viable population (*which is 5000 individuals because the population is congruent with those in the surrounding areas*) and above any other threshold that may be societally desirable* (to be determined by agriculturalist and commercial bean farmers in the area). Censuses will be conducted under responsibility of the Serengeti Wildlife Institute, and the Game Department in agreement with local village councils and user groups will conduct allocation to the users. Hunting will be closed if the impala population is 20% above the minimally acceptable numbers. Disagreements will be judged by the District Court of …." .

Monitoring and feedback

28. Assessment methods and specific procedures for sustainable use have to be developed together with criteria and indicators, including for management plans.

29. The implementation of biological and ecological inventory, monitoring programs and classification systems to determine appropriate biodiversity conservation should be undertaken, including:

(a) measures and frameworks for managing resources on a sustainable basis;

(b) fish/animal/resource health-monitoring schemes to assess the level of risk being imposed and guide remedial action at the right time and place for successful intervention;

(c) disease transfer from domestic animals to wildlife (e.g., rabies various distempers, rinderpest) or perhaps from wildlife to livestock to wildlife (e.g. tuberculosis) imposes a major threat to preservation of wildlife and to the sustainable use of wildlife; in addition the costs of the production of milk or meat may become uneconomical because of these diseases. Apart from health-monitoring, the monitoring of disease transfer (also through cattle rustling and illegal transports) is thus needed.

(d) Certification, such as the Forest Stewardship Council (FSC) for forests and the Marine Stewardship Council (MSC) for marine resources, including:

(i) a system of resource inspection;

(ii) a means of tracking the product of the resource through a "chain of custody" following the raw material through to the finished product,

(iii) a label which provides consumers with information and options to influence the process through their purchasing decisions.

(e) For the marketing of meat from wildlife sources, including bush meat, a certification procedure should be set up which includes a verified statement about (1) species, (2) country and location of

origin, (3) CITES-status and/or TRAFFIC-status, (4) health inspection status. For wildlife products there is no certification mechanism or trade label yet.

E. Management elements

Modeling

30. Modeling is an important tool to analyze different harvesting scenarios, to determine maximum sustainable yield or to determine optimal land use allocations. Different types of models can be discerned, and for any management question at least one model is envisable. Models can be computer based, but are not necessarily dependent on computers or algorithms, because basically a picture in the sand is a model too. The point is that models are helpful to get a better grip on cause-and-effect, and often help planners, decision-makers or even local people to grasp the possible outcomes of (different) management options and management interventions. Also in multiple-use evaluations models can be of great use. Models also make it easier to increase accountability because different stakeholders can get a better insight in the planning process or in the decision making process.

31. For dry lands and game utilization quite a number of models exist to understand dynamics of savannas, vegetation patterns, water infiltration, and primary production. Models exist on herbivore population dynamics, sustainable off take calculations, restocking, disease transfers, and livestock fluctuations.

Planning tools

32. To be effective in promoting sustainable use of biological diversity the different planning tools have to be developed and implemented at the right place and time. The following different tools have been tried at various places:

(a) The need for integration of activities of different actors in society appears to be a recurrent need. Integrated Management, involving comprehensive assessments, setting of objectives, planning and management of concrete land- or seasurfaces (areas) for all economic and social sectors is one of those. This is a participatory process involving all decision-makers in the public and private sectors. At other places the same approach has been named Landscape Ecological Planning (LEP) or Integrated Land Planning. The question is whether this type of planning is a “paper exercise” or a real tool. Most changes in dry lands the world over seem to be the result of unplanned settlement even when management plans have been made. For solving inland water problems the key may lie in adopting an *integrated water catchment* approach, being that area that encloses all land that feeds into a defined water body. Water catchment is a natural management and development unit and is critical to promote an intersectoral approach that recognizes the interlinkages that affect water management. However, by taking the water catchment area one may find an optimal scale for organizing people and their use of resources. Different water catchments can cooperate in case of resources that operate at a larger scale, for example, migratory game. In North America the integrated setting of quota for the use of migratory waterfowl appears to work.

(b) Land zoning is another important tool. In this respect the concept of Biosphere Reserves, with their core areas (for total protection), extensive use zones and buffer zones, serves as perhaps the most optimal way of regulating resource use in a spatial context. Permits and quota for use then may depend on distance from e.g. reserves. Biosphere Reserves and Buffer zones appear to work, also in dry lands, because concrete pieces of land get an allocated function enshrined in rules and laws.

(c) Important tools for the sustainable use of resources also encompass the rehabilitation of resources that were over-used in the past. Objective criteria to select sites for restoration and rehabilitation may be needed to be developed, although often this more simply will depend on availability of areas to be set aside then on direct criteria. In dry lands, rehabilitation has been successful in many new national parks that started from old, over-used ranches.

(d) Another essential instrument for sustainable use is the "set aside". See next point (conservation).

Conservation

33. As element of conservation the following aspects should be considered:

(a) At some locations resources should not be used at all so as to guarantee sufficient seed stock for example, or to ensure sufficiently large populations of the resource to be harvested elsewhere. Set aside areas can be used for non-consumptive sustainable use, though, such as tourism. Pure genetic lines and wild genotypes can be maintained at such sides too; these may be needed for agricultural or medicinal purposes now or in future.

(b) The identification and protection of essential or significant habitats through the establishment of (marine) protected areas not only reduces overharvesting (-fishing), but also prevents habitat destruction. Protected areas tend to be more successful when designated as part of a larger integrated area management strategy [is this true for dry lands? – we have to discuss this]

(c) To optimally protect whole ecosystems or to promote conservation, networks of protected areas may be more effective than large, individually protected areas. Nearly all reserves in dry lands are too small for the long-term maintenance of biodiversity.

Access and accountability

34. Many dry lands in the world are not very suitable for agriculture if there is no irrigation. The consequence is that many of these areas are utilized for (a) livestock rearing, (b) wildlife utilisation, and (c) firewood and charcoal harvesting. The use of these resources depends very much on the type of ownership of the land and/or the living resources.

35. Different types of ownership can be recognized, and these different forms have strong implications for the sustainability of exploitation:

(a) Private ownership;
(b) Communal ownership;
(c) State ownership;
(d) Open access.

36. Four different statuses of especially (migratory) wild animals are of relevance here:

(a) Full ownership of these resources of the owner of the land;
(b) Fugitive resource (only "owned" when on a particular piece of land);
(c) *Res nullius* (more-or-less State owned);
(d) Internationally owned (*de facto* not regulated in dry lands).

37. Ownership and accountability are closely intertwined, and so are management strategies. Sub-division of the land strongly impinges on the overarching issue of scale, and may cause complete break down of stability of vegetation cover, thus making sustainable use impossible.

Harvesting methods

38. Components of good management of the harvest may include:

(a) The use of closed seasons. This applies to hunting but in a number of arid height-altitude areas there are closed seasons for plant biomass harvesting too;

(b) The application of catch limitations or quotas. Quotas are especially important for much-sought after species or rare species. The science of quota-setting is not well developed for resources of dry lands (see also modeling);

(c) "By-catch" plays a role with indiscriminate hunting with nets, snares and sometimes poison. These unselective hunting techniques can have a devastating impact;

(d) Sustainable (mari)culture through the use of close containment systems reduces the use of wild fish and raises more vegetarian than carnivorous species [also true for other resources ?];

(e) Harvesting models often recommend maintaining a population at a level where maximum sustained yield (MSY) can be achieved. It should be realized that the text book knowledge that population then should be maintained at 50% of the carrying capacity can normally not be applied in dry lands. The reason is that there is no fixed "carrying capacity" in systems that are governed by wide fluctuations in rainfall. Moreover, it is safer to keep an animal population at a higher level than half the carrying capacity because the chance of overharvesting is then much smaller while with a resulting lower catch effort the same amount can be harvested.

(f) Especially in dry lands the non-consumptive use is of extreme importance and so is trophy hunting or safari hunting since large economic benefits can be sustainably generated without a severe impact on animal populations.

Education and Public awareness

39. Education and public awareness are basic instruments to reverse the loss of biological diversity and to promote (elements for) guidelines for sustainable use. For the implementation of biological diversity education and public awareness short-term and long-term strategies are being developed. It is suggested that the Workshop should consider providing guidance on education and public awareness-raising regarding sustainable use, and concerning the elements for guidelines and their implementation.

(a) training courses and field studies to be conducted for technicians at all institutions and public service agencies [concerned with beach erosion];

(b) information and public awareness activities through the media, leaflets and educational programmes.

Traditional and indigenous knowledge

40. Strategies for collaborative management with indigenous and local communities involvement, individual landowners and agricultural producers should continue to be involved in the development and implementation of environmentally sustainable agricultural policies and programs.

41. Also (agricultural) producers should be encouraged to develop (farm) management plans that support the conservation of biodiversity and the sustainable use of biological resources.

42. As recommended by the principles of the Ecosystem approach (decision V/6) it is of importance to use all resources of information, including traditional and indigenous knowledge. This knowledge, however, should not supersede or replace scientific knowledge.

Institutional needs and capacity building

43. Institutional- and capacity-building programmes are needed to strengthen human resources and institutional capacities in government at national and local levels, and amongst local communities, including technical and scientific cooperation. It is suggested that the Workshop should consider guidance on this issue.

44. The sustainable use of living resources is severely jeopardized by unfair taxation or market distortions (often through subsidies for non-sustainable practices). Unfair taxation is frequently levied on sustainable practices, such as forms of trophy hunting and game viewing.

45. Institutions for the fair and equitable sharing of costs and benefits are normally absent; also mechanisms to equalize the burden of wildlife over an ecosystem are non existent. This situation is aggravated in cases where ecosystem encompasses two or more different countries (see International Cooperation).

International cooperation

46. International co-operation is a precondition for effective conservation and sustainable use of biological diversity and specifically genetic resources; it is therefore necessary to participate in international conservation efforts to develop and encourage the implementation of ecological management approaches, and to develop sustainable use agreements.

47. International co-operation is especially important for a number of living resources, namely, for migratory game, perhaps migratory fish, for migratory birds and for disease- and pest control. International co-operation is also needed for cross-boundary parks.

48. In case of cross-boundary parks, the co-operation has often been formalized. For migratory birds the Convention of Bonn applies although in most countries this Convention has hardly been implemented. There are many international agencies and organizations for the international co-operation for the control of diseases (for instance, rinderpest) and pests (for instance, locusts). For cross-boundary migratory game international agreements are weak or non-existent, but needed. This has to be explored under the overarching issue of scale.

ANNEX 1.

Draft

POLICY STATEMENT ON SUSTAINABLE USE OF WILD LIVING RESOURCES

1. Conservation of biological diversity is central to the mission of IUCN, and accordingly IUCN recommends that decisions of whether to use, or not to use, wild living resources should be consistent with this aim.

2. BOTH CONSUMPTIVE AND NON-CONSUMPTIVE use of biological diversity are fundamental to the economies, cultures, and well being of all nations and peoples.

3. Use, if sustainable, can serve human needs on an ongoing basis while contributing to the conservation of biological diversity.

4. At its session of the General Assembly (Perth, 1990) in Resolution 18.24, IUCN -- The World Conservation Union recognized that "the ethical, wise and sustainable use of some wildlife can provide an alternative or supplementary means of productive land-use, and can be consistent with and encourage conservation, where such use is in accordance with appropriate safeguards".

5. This position was re-affirmed in Resolution 19.54 at the following session of the Union's General Assembly in 1994 and subsequently in Resolution 1.39 at the 1st meeting of the World Conservation Congress in 1996.

6. Analyses of uses of wild living resources in a number of different contexts demonstrate that there are many biological, social, cultural, and economic factors, which combine in a variety of configurations to affect the likelihood that a particular use may be sustainable.

7. On the basis of these analyses, IUCN concludes that:

   a) Use of wild living resources, IF sustainable, is an important conservation tool because the social and economic benefits derived from such use provide incentives for people to conserve them;

   b) When using wild living resources, people should seek to minimize losses of biological diversity;

   c) Enhancing the sustainability of uses of wild living resources involves an ongoing process of improved management of those resources; and

   d) Such management should be adaptive, incorporating monitoring and the ability to modify management to take account of risk and uncertainty.

8. To increase the likelihood that any use of a wild living resource will be sustainable requires consideration of the following:

   a) The supply of biological products and ecological services available for use is limited by intrinsic biological characteristics of both species and ecosystems, including productivity, resilience, and stability, which themselves are subject to extrinsic environmental change.

   b) Institutional structures of management and control require both positive incentives and negative sanctions, good governance, and implementation at an appropriate scale. Such structures should

include participation of relevant stake-holders and take account of land tenure, access rights, regulatory systems, traditional knowledge, and customary law.

c) Wild living resources have many CULTURAL, ETHICAL, ECOLOGICAL AND ECONOMIC values, which can provide incentives for conservation. Where an economic value can be attached to a wild living resource, perverse incentives removed, and costs and benefits internalized, favorable conditions can be created for investment in the conservation and the sustainable use of the resource, thus reducing the risk of resource degradation, depletion, and habitat conversion.

d) Levels and fluctuations of demand for wild living resources are affected by a complex array of social, demographic, and economic factors, and are likely to increase in coming years. Thus attention to both demand and supply is necessary to promote sustainability of uses.

9. IUCN is committed to ensuring any uses of wild living resources are equitable and ecologically sustainable, and to this end it has established the Sustainable Use Initiative which incorporates regionally-structured Specialist Groups of the Species Survival Commission to:

a) Identify, evaluate, and promote the principles of management that contribute to sustainability and enhanced efficiency in the use of wild living resources; and

b) Regularly communicate their findings to members and the broader community.

ANNEX 2.

IUCN WORKSHOP ON TOOLS TO ASSESS SUSTAINABILITY OF USES OF WILD NATURAL RESOURCES

White Oak Conference Center, Yulee, FL, USA
20-24 January 2001

Principles of Sustainable Use

"Sustainability is the capacity to create, test and maintain adaptive capability[9]."

Background

The definition of "sustainable use," Axioms and Guiding Principles presented below reflect the consensus of participants attending a workshop organized by the IUCN Sustainable Use Initiative in collaboration with the Technical Advisory Committee (TAC) of the SSC Sustainable Use Specialist Group (20-24 January 2001; Gilmann Foundation White Oak Plantation). The aims of the workshop were to identify and design practical "tools" to implement an *Analytical Framework* developed by the TAC, and recommend procedures to test the "tools." Participants felt that a clear definition and guiding principles were necessary to provide a common context within which the *Analytical Framework* might be used.

The definition, axioms and guiding principles reflect the collective understanding and wisdom of the participants in the workshop. The participants had varied backgrounds ranging from staff in IUCN's regional and country offices to academic researchers; from policy promoters to individuals striving to promote sustainable resource management practices in the field. They came from several regions including both developed and developing nations. While no one at the workshop would consider the concepts presented below to the definitive and immutable, the participants' backgrounds and professional experience, lends substantial credibility to consider them as a working "hypothesis".

The concepts presented, especially in the Guiding Principles, must be considered in the context in which they are being applied. Participants recognized that in highly industrialized countries the standard by which the Guiding Principles should be applied would be higher than in developing countries where field practitioners do not have ready access to sophisticated technologies.

Definition

Sustainable use, both extractive and non-extractive, is a dynamic process toward which one strives in order to maintain biodiversity and enhance ecological and socio-economic services, recognizing that the greater the equity and degree of participation in governance, the greater the likelihood of achieving these objectives for present and future generations.

[9] Holling, C. S. 2000. *Theories for Sustainable Futures*. Conservation Ecology 4 (2) http://www.consecol.org/journal/vol4/

Axioms

1. Use of wild living natural resources takes place.

2. In some instances, the very survival of people and their cultures depends upon use of wild living natural resources.

3. Use of wild living natural resources is a means of realizing their value.

4. Sustainable use is a means of bringing about conservation of species and habitats.

5. Ecological sustainability depends on maintaining biological diversity, key ecological functions and the population(s) of target species above their thresholds for long-term viability.

6. Management of wild living resources may be the responsibility of individuals, communities, and other entities, both governmental and non–governmental.

7. In pursuing sustainable use the greater the equity and level of participation in governance, the greater the likelihood of achieving the objectives of maintaining biological diversity and enhancing ecological and socio-economic services.

Guiding Principles

1. Sustainable use will most likely be achieved with consideration of sociopolitical, economic, biological, and user factors, at the community, sub-national, national, and international levels.

2. Sustainable use is enhanced by supportive incentives, policies, laws, and institutions at all levels of governance, and by effective linkages between them.

3. Local communities and other parties who have management responsibility for wild living natural resources must be supported by acknowledged rights and the means to manage the resources.

4. The contribution and needs of those who manage wild living natural resources must be appropriately reflected in the allocation of the benefits from the use of those resources.

5. Adaptive management, relying on an iterative process of timely and transparent feedback from socio-economic, resource and ecological monitoring, is essential for sustainable use.

6. Sustainability of living wild resource use is enhanced if traditional/local knowledge is taken into account.

7. Sustainable use of wild living resources is enhanced if managerial jurisdictions match ecological and socio-economic scales.

8. Subsidies that distort markets, promote habitat alteration or destruction, and unsustainable use of natural resources should be eliminated.

ANNEX 3.

Sustainable Use within an Ecosystem Approach

Submitted for information

to

5th meeting of the

Subsidiary Body for Scientific, Technical and Technological Advice

to the

Convention on Biological Diversity

Prepared under the auspices of IUCN – Sustainable Use Initiative

IUCN
The World Conservation Union

SUI
Sustainable
Use Initiative

1. Background

1. This document has been prepared by the IUCN/SSC Sustainable Use Specialist Group (SUSG) for multiple purposes, one of which is to assist the Parties to the Convention on Biological Diversity (CBD) in their efforts to identify principles for sustainable use. Although the definition of sustainable use under the Convention applies to all components of biodiversity including domesticated forms, the emphasis of this information paper is focused on wild species. The paper is being submitted as an Information Document to assist the delegates attending SBSTTA-5,.

2. SBSTTA-4 examined a working document "*Development of Approaches and Practices for the Sustainable Use of Biological Resources, Including Tourism*," and concluded:

> *UNDERSTANDING that linkages between tourism and sustainable use of biological diversity will be examined by the Executive Secretary in order to elucidate any principles, approaches or methodologies that may apply to a wider consideration of sustainable use, in the fifth meeting of SBSTTA and that in further preparing for this meeting contact will be initiated with other groups involved in sustainable use, such as the Sustainable Use Initiative.*

3. In addition to the treatment of sustainable use in the development of thematic work programmes on dryland ecosystems and inland water systems, the provisional agenda for SBSTTA-5 will specifically address sustainable use under the following items:

   a. 3.1: Cooperation with other bodies [3.5.3. Forest biological diversity: status and trends and identification of options for conservation and sustainable use].

   b. 4.2: Cross-cutting issues [4.2.3 Sustainable use of the components of biological diversity: identification of sectoral activities that could adopt biodiversity-friendly practices and technologies].

4. The CBD has begun development of an Ecosystem Approach for the implementation of the Convention. The document UNEP/CBD/COP/4/Inf.9 titled "***Report of the Workshop on the Ecosystem Approach***" held in Malawi (January 1998) was presented at COP-4 (Bratislava; May 1998). The Parties took note of the report and requested the SBSTTA to develop principles and other guidance on the ecosystem approach, taking into consideration, *inter alia*, the results of the Malawi workshop, and to report thereon to COP-5 (Decision of the Parties IV/1/B).

5. The CBD has begun the development of indicators for monitoring biological diversity and the subject was discussed at the SBSTTA-3. In considering the report of SBSTTA-3 on this subject, COP-4 decided (Decisions IV/1/A/3 & 4) that work on indicators should be continued by the SBSTTA and proposed that "*further work on indicators by the Parties and by SBSTTA should take account of,* inter alia*, further work by SBSTTA on the development of the ecosystem approach*".

6. The need for indicators to monitor the status of biological diversity is recognized. Whilst this paper provides guidance on principles of sustainable use, it may also assist the SBSTTA in its work on identifying and elaborating such indicators.

7. Given the closely related nature of the principles of the ecosystems approach, as presented in document UNEP/CBD/COP/4/Inf.9, and the principles of sustainable use, they are presented together to illustrate their congruence. Indeed the linkages between sustainable use and the ecosystem approach, as being developed, can be translated into the close relationship between sustainable use and the other two objectives that underpin the CBD (i.e., conservation and equitable sharing of benefits).

2. Introduction

8 The three objectives of the CBD are:
   a. the conservation of biological diversity,
   b. the sustainable use of its components, and
   c. the fair and equitable sharing of benefits arising out of the use of genetic resources (Article 1).

9. The CBD Secretariat has carried out a preliminary identification of the proximate threats to, and the ultimate causes of, the loss of biological diversity (Document UNEP/CBD/SBSTTA/2/3). These are summarized as follows:

PROXIMATE THREATS:
Over-harvest or over-kill of wild species
Introduced species
Habitat destruction or deterioration
Pollution
Climate change
ULTIMATE CAUSES:
Inappropriate land tenure
Population change
Cost-benefit imbalances
Cultural factors
Misdirected economic factors
National policy failure

10. When using wild species, people should seek to maintain the structure and functions of natural ecosystems. Achieving sustainability involves an ongoing process of improved management of the resource. Management should be adaptive, incorporating monitoring and the ability to modify management to take account of risk and uncertainty.

11. Unsustainable use through "over-harvest or overkill of wild species" has been identified as one of the proximate threats to biological diversity, but is likely to vary according to the species concerned and may not necessarily represent the greatest threat. In terrestrial ecosystems, habitat destruction and the effects of introduced species may be more significant and, in aquatic systems, pollution is a serious threat to biological diversity.

12. The CBD has noted that *"... consumptive use of wild species could be a contribution to conservation."* (UNEP/CBD/COP/3/3 dealing with the Report and Recommendations of SBSTTA-2). Whereas use has often been thought of as having a neutral or negative influence on the conservation of wild living resources, there is now a growing body of evidence, as reflected in the three inter-related objectives of the CBD, to indicate that legal and responsible use can also enhance conservation under certain circumstances.

13. Sustainability should not be seen as a fixed end-point to be reached, but rather as a direction to guide constructive change. The fact that a use may have been sustainable in the past or may be sustainable now is no guarantee that it will remain sustainable in the future. Equally, unsustainable uses may be changed to sustainable uses through a focus on tenure, incentives and adaptive management.

14. The word "sustainable" implies a condition rather than being a variable. Sustainability needs to be expressed in probabilistic terms (*i.e*. the likelihood of a use being sustainable) in order to carry out scientific analyses.

15. Whether a use has been sustainable must be judged in hindsight by examining whether the status of the resource and the ecosystem in which it occurs have remained within certain specified limits. The likelihood that a use will be sustainable into the future requires consideration of social and economic factors in addition to ecological factors.

16. At the ecosystem level, the aim of sustainable use is to maintain the biological diversity. This provides a powerful linkage to the first objective of the CBD which is the conservation of biological diversity. As recognized in Principle 5 of the Ecosystem Approach, the concept of biological diversity must include ecosystem functions, processes and resilience.

17. Any pronouncement on sustainability at the ecosystem level will require the development of indicators for measuring biological diversity that are to be considered by SBSTTA-5 (Agenda Item 4.2.2). At the level of the ecosystem these indicators should ideally assess trends in biological diversity and the sustainability of uses. These will differ for each thematic area (*e.g.* inland water ecosystems, marine and coastal ecosystems, agricultural ecosystems, forest ecosystems, and dryland, Mediterranean, arid, semi-arid, grasslands and savannahs), and possibly within these broad ecosystem types.

3. Definitions

18. The following definitions from Article 2 of the Convention on Biological Diversity underpin the principles outlined in this document —

a. Biological Diversity:

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.*

b. Ecosystem:

A complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.

c. Sustainable Use:

The use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.

4. Criterion for Sustainability

19. Consideration of sustainability should not be based on assumptions that ecosystems are stable, nor on expectations that there will always be a productive annual renewal of whatever has been taken from a wild population. In semi-arid and arid ecosystems, for example, environmental extremes may result in extreme annual variations in rates of renewal by wild populations. The following simple criterion for sustainability has applicability at both the species and ecosystem level.

Provided biological diversity and key ecological functions are maintained, and the population of any target species remains above thresholds for long-term viability and at levels where it remains a significant resource for people, then the use can be regarded as generally sustainable.

5. Factors Influencing Sustainability

20. In order to increase the likelihood that any use of a wild species will be sustainable requires consideration of the following:

- The supply of biological products and ecological services available for use is limited by intrinsic biological characteristics of both species and ecosystems, including productivity, resilience, and stability, which themselves are subject to extrinsic environmental change.

- Institutional structures of management and control require both positive incentives and negative sanctions, good governance, and implementation at an appropriate scale. Such structures should include participation of relevant stake-holders and take account of land tenure, access rights, regulatory systems, traditional knowledge, and customary law.

- Wild species have many cultural, ethical, ecological and economic values which can provide incentives for conservation. Where an economic value can be attached to a wild species, perverse incentives removed, and costs and benefits internalized, favourable conditions can be created for investment in the conservation and the sustainable use of the resource, thus reducing the risk of resource degradation, depletion, and habitat conversion.

- Levels and fluctuations of demand for wild species are affected by a complex array of social, demographic, and economic factors, and are likely to increase in coming years. Thus attention to both demand and supply is necessary to promote sustainability of uses.

6. **Principles**

21. The principles of the ecosystem approach presented in CBD document UNEP/CBD/COP/4/Inf.9 and the principles of sustainable use being developed by the IUCN/SSC Sustainable Use Specialist Group are similar and are compared below.

	PRINCIPLES OF AN ECOSYSTEM APPROACH	SUSTAINABLE USE PRINCIPLES
	INTRODUCTORY PARAGRAPHS	
A	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.	In any given situation, a multitude of configurations of biological, social, and economic conditions can lead to sustainability of use.
B	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.	Sustainability relies on favourable combinations of political, social, cultural, economic, and ecological factors and incentive systems which harness positive human motivations. Accountability should be realized through the formation of appropriate institutions. Different modes of use may require different institutional structures (*e.g.*, harvesting marine fisheries may require regulation, whereas harvesting another resource may depend on market forces). All uses should be managed to reduce the risk of compromising key functions at the ecosystem level and promote sustainability.
	PRINCIPLES	
1.	**Management objectives are a matter of societal choice.**	**The objective of sustainable use is, through the derivation of benefits, to improve human welfare by conserving biological diversity and maintaining ecosystem productivity.**
	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.	*Rationale:* Uses of natural resources are fundamental to the economy, culture and well-being of all people and all nations. Accordingly, public involvement is essential in the development of sustainable use regimes, including management options and policy.
2.	**Management should be decentralized to the lowest appropriate level.**	**Rights of access to resources and responsibilities for their management are important factors affecting sustainability.** **Use is most likely to be sustainable where the prime beneficiaries are the people living with and using the resource.**

	PRINCIPLES OF AN ECOSYSTEM APPROACH	SUSTAINABLE USE PRINCIPLES
	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.	*Rationale:* Rights of access may be vested in the State, the community, a private body or the individual. For use to be sustainable, such rights need to be clearly defined and accepted by the peoples~~s~~ they affect directly. Furthermore, the capacity to enforce those rights must also exist.
3.	**Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.**	**To achieve sustainable use of certain wild resources over increasing geographic scales will require the development of multiple institutions.**
	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.	*Rationale:* To prevent use regimes in one ecosystem from having negative impacts on other ecosystems, it will be necessary to develop a 'bottom-up' hierarchy of institutions to address the management of various resources at the appropriate geographic scale (see Principle 7).
4.	**Recognizing potential gains from management there is a need to understand the ecosystem in an economic context. Any ecosystem management program should:**	**Sustainable use of wild living resources requires the effective structuring and functioning of economic incentives.** **The three points (a-c) noted in the left column apply directly to sustainable use. Sustainability is more likely when:**
	(a) reduce those market distortions that adversely affect biological diversity;	**(a) economic activities are closely linked to resource tenure systems;**
	(b) align incentives to promote sustainable use; and	**(b) incentives are aligned to favour re-investment of returns from use in ecosystem conservation; and**
(b)	**(c) Internalize costs and benefits in the given ecosystem to the extent feasible.**	**(c) market interventions arising from externally imposed conservation concerns take full account of the socio-economic implications of their application.**
	Rationale: 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 favour the conversion of land to less diverse systems.	*Rationale:* The greater the economic significance of a resource, the greater the need to establish strong institutions for its management and use. Conversely, local people are seldom motivated to develop strong, flexible and innovative institutions for wild living resources of no economic value or an economic value that has not been recognized.

	PRINCIPLES OF AN ECOSYSTEM APPROACH	SUSTAINABLE USE PRINCIPLES
	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	All ecosystem conservation entails overhead costs — including opportunity costs. The more returns from sustainable use can offset these costs, the higher the likelihood of sustainability. Well-regulated markets with strong links to producers, provide incentives for re-investment in ecosystem conservation. Sustainability is more likely when the benefits from using wild living resources in an ecosystem are greater than the costs of conserving that ecosystem and provide higher returns, in the long-term, than alternative uses of that ecosystem. Accordingly, economic instruments such as sanctions, subsidies, multi-lateral agreements and international treaties should not inadvertently act against sound economic practices that promote the sustainability of use of wild resources.
5.	**A key feature of the ecosystem approach includes conservation of ecosystem structure and functioning.**	**Sustainable use should be implemented at the ecosystem level since it is the maintenance of key ecosystem processes and functions which ultimately determine sustainability.**
	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.	*Rationale:* A use may be regarded as sustainable at the ecosystem level when biological diversity and key ecological functions are maintained. Recognizing this, sustainable use of a population of a species can enhance the conservation of those populations.
6.	**Ecosystems must be managed within the limits to their functioning.**	**Sustainability should be assessed in terms of ecological effects at the ecosystem level.**
	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.	*Rationale*: Social, economic and ecological factors determine whether a use will be sustainable, but any use must remain within the limits of ecosystem functioning. In determining whether a use has been sustainable, the sole indicator is the status of the ecosystem. The relationship between levels of exploitation and ecosystem functioning can generally be advanced through adaptive management.

	PRINCIPLES OF AN ECOSYSTEM APPROACH	SUSTAINABLE USE PRINCIPLES
7.	**The ecosystem approach should be undertaken at the appropriate scale.**.	**The achievement of sustainable use requires monitoring of biological diversity and ecosystem functioning at a range of scales.** **Without losing the integrity of data, biophysical information derived from research undertaken at the local level needs to be scaled-up to the levels that are useful to policy-makers.**
	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	*Rationale:* Recognizing the continuum of genes, species, and ecosystems which characterize the ecosystem approach, and the interactive requirements of Principles 3, 5 and 6, the variables to be monitored for sustainability need to be selected on a case-specific basis related to their roles in the functioning of the ecosystem involved. The synthesis of information is more than the simple aggregation of small-scale data into a broad scale that is useful for policy makers. The utility of local research will be realized by clearly defining policy needs and achieving dialogue between policy-makers and researchers. For example, the annual loss of organic matter in soils at the field level may be a problem for a soil scientist, but is rather abstruse for a policy-maker who is more interested in assessing immediate opportunity costs against economic or social benefits at a regional or national level. Therefore, the perception of a problem, and the consequent utility of indicators, may change substantially, according to the perspective of the users at different hierarchical levels.
8.	**Recognizing the varying temporal scales and lag effects which characterize ecosystem processes, objectives for ecosystem management should be set for the long term.**	**Management for sustainable use should be based on the recognition that ecosystems are dynamic rather than stable.**
	Rationale: 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.	*Rationale:* In many ecosystems large episodic environmental fluctuations may play a greater role in determining species population levels and ecosystem status than any use regime. Accordingly, sustainability concepts need to accept that uses may need to be opportunistic and adapted to prevailing conditions. Sustainability should be seen as a long-term goal aimed at maintaining demographically and ecologically viable populations of species rather than holding populations at particular levels.
9.	**Management must recognize that change is inevitable.**	**All use regimes result in changes to ecosystems and such changes require adaptive management.**

	PRINCIPLES OF AN ECOSYSTEM APPROACH	SUSTAINABLE USE PRINCIPLES
	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 use adaptive management to anticipate and cater for such changes and events and should be cautious in making decisions which may foreclose options.	*Rationale:* Uncertainties will affect uses of ecosystems and species populations. Policy makers need to recognize that: (a) consumptive and non-consumptive uses result in impacts on ecosystems which may be positive and/or negative;
	(a)	(b) commercial and subsistence uses of ecosystems are extremes of a continuum of different kinds of uses;
(a)	(b)	(c) successful sustainable use can begin with cautious off-takes that are adjusted over time according to an ongoing adaptive management system based on a monitoring programme.
10.	**The ecosystem approach should seek the appropriate balance between conservation and use of biological diversity.**	**At the level of the ecosystem, the supply of biological products and ecological services available for use is limited by intrinsic biological characteristics of both species and ecosystems, including productivity, resilience, and stability, which themselves are subject to extrinsic environmental change.**
	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.	*Rationale:* Use, whether consumptive or non-consumptive, is the derivation of benefit from a resource. Objectives for ecosystem management are determined by humans (Principle 1 of the Ecosystem Approach) and the measure of success for sustainable use and conservation is maintenance of biological diversity at the ecosystem level.
11.	**The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.**	**The achievement of sustainable use requires the application of monitoring systems that can be implemented by users.**

PRINCIPLES OF AN ECOSYSTEM APPROACH	SUSTAINABLE USE PRINCIPLES
Rationale: Information from all sources is critical to arriving at effective ecosystem management strategies.	*Rationale:* The information needed to achieve sustainability of any use will depend, to a large extent, on the institutional context in which the resource is being managed. Under adaptive management systems, sustainability may be achieved using different monitoring techniques in different situations. Traditional institutions and knowledge may suffice in some, whereas in others, the most modern technology may be needed. A judicious mix of local civil knowledge and modern scientific methods may be best suited to meet changing circumstances within particular use systems.
12. The ecosystem approach should involve all relevant sectors of society and scientific disciplines.	**The sustainability of resource use requires a multi-disciplinary approach and the involvement of all relevant stakeholders.**
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.	*Rationale:* The foregoing eleven principles indicate that sustainability has to be approached in the social, economic, and biological realms. In considering the views of all relevant stakeholders in research, analysis, and decision-making, it is essential to take account of different stakeholder's perspectives, giving highest priority to those of local communities/ landholders.

6. Conclusions

22. The principles of an ecosystem approach as proposed in the CBD document UNEP/CBD/COP/4/Inf.9 provide a suitable framework for developing principles of sustainable use.

23. It would seem important that future work of the Conference of the Parties (COP) maintains a close link between the ecosystem approach and sustainable use. The principles are not merely cross-cutting through thematic areas - they are over-arching. The need for such a linkage is explicit in a number of the decisions from COP-4. For example:

    a. The work program for Inland Water Ecosystems begins with the paragraph: *Recognizing the importance of adopting an ecosystem approach that integrates conservation and sustainable use of biological diversity* . . .(Decision IV/4, Annex 1); and

    b. The work program for conservation of Forest Biological Diversity begins with the statement that "*Holistic and inter-sectoral approaches that integrate the conservation and sustainable use of biological diversity, taking account of social and cultural and economic considerations . . .*" (Decision IV/7 II.10).

24. In developing the principles of sustainable use outlined in this document, it is clear that incentives are central to achieving sustainability. In accordance with the provisions of Article 11 of the CBD, therefore, future considerations of sustainable use should remain closely linked to work on incentives. Decisions from COP-4 encourage this - the following two paragraphs are taken from Decision IV/10 on *Measures for implementing the Convention on Biological Diversity*, (Section A on Incentive measures):

    The Conference of the Parties,

    > *Reaffirming the importance for the implementation of the Convention of the design and implementation by Parties and Governments of economically and socially sound measures that act as incentives for the conservation and sustainable use of biological diversity*, and
    >
    > *Recognizing that incentive measures should be designed using an ecosystem approach and with the targeted resource management audience in mind, . . .*;

    In addition, the work programme for Agricultural Biodiversity seeks *". . . the identification of incentives to overcome constraints and enhance the conservation and sustainable use of agricultural biological diversity . . ."* (Decision IV/6, paragraph 6).

25. The development of indicators for biological diversity will be directly relevant to sustainable use. Indeed, in any given instance within a thematic area of the CBD, the same indicators may measure success in conserving biological diversity and achieving sustainability of uses.

26. Although the Parties to the CBD have decided to apply the concept of equity in benefit sharing in the narrow context of genetic resources, case studies on sustainable use indicate that this principle can be extended broadly to the sharing of benefits derived from biological diversity in all its forms as defined in Article 2 of the CBD.

27. It thus becomes a matter of increasing importance in the organization of the CBD work programme to ensure that so-called "cross-cutting" agenda items such as the ecosystem approach, sustainable use, incentives, biodiversity indicators and benefit-sharing are considered simultaneously and consistently across all the thematic areas.
