UNEP

CBD

CONVENTION ON BIOLOGICAL DIVERSITY

Distr.
GENERAL

ENGLISH ONLY

ADDIS ABABA PRINCIPLES AND GUIDELINES FOR THE SUSTAINABLE USE OF BIODIVERSITY

INTRODUCTION

The Annex to this document contains the Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity, as adopted in Addis Ababa, Ethiopia, from 6 to 8 May 2003. The Addis Ababa workshop synthesized the outcomes of the three previous workshops on the issue of sustainable use, integrating different views and regional differences, and developing a set of practical principles and operational guidelines for the sustainable use of biological diversity. The resulting Guidelines are still considered to be in draft format until adoption by the seventh meeting of the Conference of the Parties.

/…

Annex

Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity

I. BACKGROUND

A. Explanation of the mandate

1. In recent decades, biodiversity components have been used in a way leading to loss of species, degradation of habitats and erosion of genetic diversity, thus jeopardizing present and future livelihoods. Sustainable use of components of biodiversity, one of the three objectives of the Convention, is a key to achieving the broader goal of sustainable development and is a cross-cutting issue relevant to all biological resources. It entails the application of methods and processes in the utilization of biodiversity to maintain its potential to meet current and future human needs and aspirations and to prevent its long-term decline.

2. Sustainable use of the components of biological diversity is addressed by the Convention in Article 10, 1/ which, *inter alia*, requests contracting Parties to "adopt measures relating to the use of biological diversity to avoid or minimize impacts on biological diversity". In order to assist Governments in their implementation of Article 10, the Conference of the Parties at its fifth meeting requested the Executive Secretary "to assemble practical principles, operational guidelines and associated instruments, and guidance specific to sectors and biomes, which would assist Parties and Governments to develop ways to achieve the sustainable use of biological diversity, within the framework of the ecosystem approach" (decision V/24).

B. The three regional workshops held in 2001-2002

3. In response to decision V/24, the Executive Secretary, in collaboration with the Governments of Mozambique, Viet Nam and Ecuador and with financial support from the Government of the Netherlands, held three regional expert workshops in 2001/02 designed to develop a set of principles and practical guidelines and associated enabling instruments for Parties, resource managers and other key stakeholders

---

1/ Article 10 reads as follows:

"Each Contracting Party shall, as far as possible and as appropriate:

(a) Integrate consideration of the conservation and sustainable use of biological resources into national decision-making;

(b) Adopt measures relating to the use of biological resources to avoid or minimize adverse impacts on biological diversity;

(c) Protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements;

(d) Support local populations to develop and implement remedial action in degraded areas where biological diversity has been reduced; and

(e) Encourage cooperation between its governmental authorities and its private sector in developing methods for sustainable use of biological resources."

to operationalize them.

4. The first workshop, held in Maputo in September 2001, focused on key elements relating to the sustainable use of dry-land resources and wildlife utilization in Africa. 2/ The second workshop was held in Hanoi in January 2002 and addressed in particular the uses of forest biological diversity, including timber and non-wood forest products in Asia, with references to agricultural biological diversity. 3/ The third workshop, held in Salinas, Ecuador, in February 2002, focused on marine and freshwater fisheries uses particularly in Latin America and the Caribbean. 4/

C. The fourth open-ended workshop

5. At its sixth meeting, the Conference of the Parties, in its decision VI/13, called for a fourth workshop in order to:

(a) Synthesize the outcomes of the three workshops;
(b) Integrate different views and regional differences; and
(c) Develop a set of practical principles and operational guidelines for the sustainable use of biological diversity.

6. The outcome of the fourth workshop will be submitted for the consideration of the Subsidiary Body on Scientific, Technical and Technological Advice at its ninth meeting, in November 2003. In turn, the Subsidiary Body will submit its advice to the seventh meeting of the Conference of the Parties.

D. Use of terms

7. The Convention recognizes the need of the sustainable use of biological diversity, but for this exercise, the terminology is not sufficiently specific. Indeed, "sustainable use **of biological diversity**" is mentioned in many articles (Table 1), in other articles the Convention mentions "sustainable use **of its components**" (Table 1), and in the main article dealing with sustainable use, namely Article 10, but also elsewhere (Table 1) the convention refers to the "sustainable use **of biological resources**".

8. **"Biological resources**" as given in Article 2 of the Convention, *'includes genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity'*.

9. The definition of "**components of biological diversity**" is not provided in Article 2, and the definition of "**biological diversity**" should be further clarified for operational purposes. In Article 2, *"biological diversity means the variability among **living** organisms [*emphasis added*] 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"*. 'Variability' according to the Oxford Dictionary is derived from the word "*variable 1. that can be varied or adapted …; (Bot. & Zool., of species) including individuals or groups that depart from the type*". In this context, it is suggested to use the word "Variety": *1. being various, diversity, absence of monotony or uniformity"*).

10. In this respect the Conference of Parties' Decision V/5/Appendix/1 is enlightening, where **agricultural biodiversity** was defined as *"Agricultural biodiversity is a broad term that includes all*

2/ The report of the Maputo workshop is contained in document UNEP/CBD/COP/6/INF/24/Add.1

3/ The report of the Hanoi workshop is contained in document UNEP/CBD/COP/6/INF/24/Add.2

4/ The report of the Salinas workshop is contained in document UNEP/CBD/COP/6/INF/24/Add.3.

components of biological diversity of relevance to food and agriculture, and all components of biological diversity that constitute the agro-ecosystem: the variety and variability of animals, plants and micro-organisms, at the genetic, species and ecosystem levels, which are necessary to sustain key functions of the agro-ecosystem, its structure and processes …".

11. Following this example, it is proposed to adopt as the working definition of biodiversity: *"biodiversity means the variety and variability of living organisms at the genetic, species and ecosystem* levels and the ecological complexes of which they are part."

12. In this context, "components of biodiversity" include:
- (a) genetic material;
- (b) populations;
- (c) species;
- (d) functional groups (guilds such as pollinators) and communities;
- (e) ecosystems and habitats (for example, undifferentiated vegetation cover, forest, coral reefs, and other aggregate terms that denote the other biotic components of ecosystems).

Table 1. Use of the term *"**sustainable use of …**"* in the different articles of the Convention of Biological Diversity. In the use of this term in the Convention, three different descriptions of "sustainable use" can be found.

Sustainable use **of biological diversity**	Sustainable use **of components of biological diversity**	Sustainable use **of biological resources**
articles in the Convention: 5, 6a, 6b, 7c, 8g, 8j, 12b, 13b, 16-1, 17-1, 21-4, 25-2c, 25-2d	*articles in the Convention*: 1, 7a, 7b, 8i, 11, 12a, Annex I/1, 2, 3	*articles in the Convention*: 8c, 10a, 10b, 10c, 10e, 12c
defined in article 2 as: "variability of living organisms from all sources"	***Not** defined in article 2* Decision V/23 on the sustainable use of dry lands, "operational objective, 8" may be of use (q.v.).	*defined in article 2 as*: - genetic resources - organisms and parts thereof - populations - other **biotic** components of ecosystems

13. Sustainable use is defined in Article 2 of the Convention as:

*"Sustainable use means the **use** (key phrase 1) of **components** (key phrase 2) of biological diversity in a way and at a rate that does not lead to the **long-term** (key phrase 3) **decline** (key phrase 4) of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations".*

14. Four key phrases are defined, namely “use”, “components”, “long-term” and “decline”.

Key Phrase I

15. *Use* is understood to be both consumptive and non consumptive. *Use* is described in economic, social and cultural terms. The **effects** of use are described in biological, economic, social and cultural contexts.

Key Phrase 2

16. Five categories of *components* of biodiversity are recognized:

a) Genetic material;
b) Populations;
c) Species;
d) Communities;
e) Ecosystems and habitats.

Key Phrase 3

17. *Long-term* decline of components of biodiversity, as in Article 2 refers, to a time period linked to the life history of the component of biodiversity concerned. Whenever one or more indicators show that a form of use is not likely to be sustainable, remedial action should be taken.

18. To meet the needs and aspirations of future generations, long term decline for biodiversity as a whole also needs to be considered in human terms. For management purposes, *Long-term* in this context means up to five human generations or 100 years. This time span approximates the present generation, parents and grandparents, children and grandchildren as a realistic human timescale for resource use. This can set the context within which goals and objectives can be framed and will provide a time frame for accountability. This time frame is intended to be used as a moving window and refers primarily to the future use potential of a resource by people.

Key Phrase 4

19. Decline within the context of Article 2 refers to detrimental change that results in loss of biodiversity. *Decline* is defined in the context of each of the five recognized components of biological diversity:

a) *Genetic material*
“A measurable reduction in any appropriate measure of genetic diversity in a population”.

b) *Populations*
“A measurable reduction in the distribution and numbers of individuals of a population or increase in fragmentation or decrease in size of population range”.

c) *Species*

"A measurable reduction of the total number of individuals, populations or geographical races of a species or increase in fragmentation or decrease in size of a species' range below the limits necessary for the maintenance of viable populations".

d) *Communities*

"A measurable reduction of the number, variety and composition of non alien species within a defined management area".

e) *Ecosystems, habitat, vegetation cover and other aggregate terms*

"A measurable reduction in the extent or amount of the biological component within the management area; a measurable decrease in the provision of ecosystem services and goods".

20. The aspects of indicators are applied in the context of adaptive management.

II. PRACTICAL PRINCIPLES OF SUSTAINABLE USE OF BIODIVERSITY COMPONENTS

A. Sustainable Use in the Framework of Sustainable Development

21. The World Summit on Sustainable Development, Plan of Implementation recognizes that poverty eradication is "… the greatest global challenge facing the world today and an indispensable requirement for sustainable development." Key actions envisaged in the Plan of Implementation related to poverty eradication that will be supported by adoption of Practical Principles and Operational Guidelines for Sustainable Use of Biodiversity Components include:

- To promote "…national programmes for sustainable development and local community development …"
- To promote "…policies and ways and means to improve access by indigenous people and their communities to economic activities ... [recognizing] that traditional and direct dependence on renewable resources and ecosystems, including sustainable harvesting, continues to be essential to the cultural, economic and physical well-being of indigenous people and their communities."
- To "Promote a sustainable use of biomass and, as appropriate, other renewable energies through improvement of current patterns of use, such as management of resources …" ,

22. The plan recognizes that "All countries should promote sustainable consumption and production patterns". In relation to biodiversity conservation, the Plan recognizes the central role the Convention plays and specifically:

- "Promotes the ongoing work of the Convention on the sustainable use of biological diversity … as a cross-cutting theme relevant to different ecosystems, sectors and thematic areas;" and
- "Encourage[s] technical and financial support to developing countries and countries with economies in transition … as appropriate … with a view to conserving and the sustainable use of biodiversity."

23. In many cases sustainable use of biodiversity components provides incentives for its conservation because of the social, cultural and economic benefits which people derive from that use. In effect, conservation and sustainable use, the first two objectives of the Convention, should be seen as two sides of the same coin. Moreover, sustainable use in itself is an important aspect of the incentive measures called for in Article 11 of the Convention. It should be recalled that only a small percentage of the Earth's

surface is designated as strictly protected against exploitation, from which it follows that sustainable use is the major conservation strategy elsewhere.

B. Practical Principles of Sustainable Use of Biodiversity Components and their rationales

24. Fourteen inter-dependent Practical Principles have been identified that govern the sustainability of uses of biodiversity components. Because of their inter-dependence, they should be considered together and, as such, provide a framework for advising governments, resource managers and other stakeholders, including indigenous and local communities and the private sector, about how they can optimize uses of biological diversity. The principles are intended to be of general relevance, although not all principles will apply equally to all situations, nor will they apply with equal rigor. Their application will very according to the biodiversity being used, the conditions under which they are being used, and the institutional and cultural context in which the use is taking place.

25. While it is recognized that the objectives of use are matters of societal and cultural choice, it is also recognized that ecosystems, and the functions within them, contribute to and maintain cultures, societies and communities. Further, any adverse impact one ecosystems can also have an adverse effect on those cultures, societies and communities. Therefore, governments should consider means to recognize and facilitate the promotion of sustainable use within such social and cultural norms.

26. In may cultures and societies, women are often the primary users and managers of components of biodiversity. It follows that special consideration should be given to involve and empower women in the management of biodiversity components.

27. In applying these practical principles it is recognized that there is considerable variability in ethical standards between cultures and thus it is difficult to articulate an all encompassing principle on ethics related to sustainable use. Nevertheless, all governments and resource managers engaging in sustainable use practices should support standards related to the ethical treatment of components of biodiversity an meet ethical standards that are consistent with the norms of the country in which the use is taking place.

28. Sustainable use can be a valuable tool to promote conservation of biodiversity and contribute to poverty alleviation within a country; however, application of the Practical Principles will be most effective when appropriate measures are taken for the protection of biological resources and remediation of the harmful affects of pollution, fire, civil and armed conflicts, displaced people and other externally derived impacts are being undertaken. The sustainability of uses of biodiversity components will be enhanced if provisions are made for mitigation, remediation, compensation, and/or rehabilitation if losses of biological diversity result from over use.

29. The Practical Principles in most instances apply to both consumptive and non-consumptive uses of biodiversity components. They take into account requirements related to: a) Policies, laws, and regulations; b) Management of biological diversity; c) Socio-economic conditions; and d) Information, research and education.

30. It is a fundamental assumption that the application of the practical principles and operational guidelines is set within the context of the Ecosystem Approach (Decision V/6). For the practical principles cross references are provided to the relevant principle(s) of the ecosystem Approach.

31. Sustainability of use of biodiversity components will be enhanced if the following Practical Principles are applied:

1. ***Supportive policies, laws, and institutions are in place at all levels of governance and there are effective linkages between these levels.***

32. There is need to have congruence in policies and laws at all levels of governance associated with a particular use. For example, when an international agreement adopts a policy regarding use of biodiversity, national and subnational laws must be compatible if sustainability is to be enhanced. There must be clear and effective linkages between different jurisdictional levels to enable a "pathway" to be developed which allows use of a resource to proceed from collection or harvest through to final use without unnecessary impediment. In most cases the primary means for achieving congruence between local and international levels of governance should be through national and subnational governments.

2. ***Recognizing the need for a governing framework consistent with international [5]/ national and subnational laws, local users of biodiversity components should be sufficiently empowered and supported by rights to be responsible and accountable for use of the resources concerned (See Ecosystem Approach Principle 2).***

33. Uncontrolled access to biodiversity components often leads to over-utilization as people try to maximise their personal benefits from the resource while it is available. Resources for which individuals or communities have use, non-use, or transfer rights are, in general, used more responsibly because they no longer need to maximise benefits before someone else removes the resources. Therefore sustainability is enhanced if Governments grant 'rights' or 'stewardship' authority, responsibility and accountability to the people who use and manage the resource, which may include communities, indigenous peoples, and private landowners. Moreover, to reinforce local rights or stewardship of biological diversity and responsibility for its conservation, resource users should participate in making decisions about the resource use and have the authority to carry out any actions arising from those decisions.

3. ***International, national and subnational policies, laws and regulations that distort markets and promote habitat degradation or otherwise generate perverse incentives for conservation and sustainable use of biodiversity, should be identified and removed or mitigated (See Ecosystem Approach Principle 4).***

34. Some policies or practices induce unsustainable behaviours that reduce biodiversity, often as unanticipated side effects as they were initially designed to attain other objectives. For example, support policies in agriculture that encourage domestic over production often generate perverse incentives for the conservation and sustainable use of biological diversity. Eliminating subsidies that contribute to illegal, unreported and unregulated fishing and to over-capacity, as required by the WSSD Plan of Implementation in order to achieve sustainable fisheries, is a further instance of the recognition of the need to remove perverse incentives.

---

[5] Where consistency with international law is referred to this recognizes: a) that there are cases where a country will not be a party to a specific international convention and accordingly that law will not apply directly to them; and b) that from time to time countries are not able to achieve full compliance with the conventions to which they are a party and may need assistance.

4. ***Adaptive management should be practiced, based on:***

a. science and traditional and local knowledge;

b. iterative, timely and transparent feedback derived from monitoring the use, environmental, socio-economic impacts, and the status of the resource being used; and

c. adjusting management based on feedback from the monitoring procedures.

(See Ecosystem Approach 9 and 11)

35. Biological systems and the economic and social factors that can affect the sustainability of use of biological diversity are highly variable. It is not possible to have knowledge of all aspects of such systems before a use of biological diversity begins. Therefore, it is necessary for the management to monitor the effects of that use and allow adjustment of the use as necessary. In this context, it is preferable to use all sources of information about a resource when deciding how it can be used. In many societies traditional and local knowledge has led to much use of biological diversity being sustainable over long time-periods without detriment to the environment or the resource. Incorporation of such knowledge into modern use systems can do much to avoid inappropriate use of a resource. Also, irrespective of scientific information about a resource, its use will most often be determined by the cultural beliefs and social norms of local society.

5. ***Sustainable use management goals and practices should avoid or minimize adverse impacts on ecosystem services, structure and functions as well as other components of ecosystems (See Ecosystem Approach Principle 3. 5 & 6).***

36. Use of any resource must take into account the functions that resource may fulfil within the ecosystem in which it occurs, and that use must not adversely affect ecosystem functions. For example, clear felling in a watershed could lead to erosion of soil and impairment of the water filtration function of the ecosystem. Avoidance of this situation would involve setting conservative cutting quotas with appropriate harvesting techniques and monitoring the effects of the harvest as it occurs. As another example, the shrimping industry has developed nets that can separate out juveniles and bycatch and also reduce negative effects on benthic and other associated communities.

6. ***Interdisciplinary research into all aspects of the use and conservation of biological diversity should be promoted and supported.***

37. International conventions and national and subnational decisions that affect use should always apply the best information on which to base decisions and be aware of the local circumstances where a use is undertaken. In addition, there is need to ensure that research is supported into the biological and ecological requirements of the species to ensure that the use remains within the capacity of the species and ecosystem to sustain that use. Further, to enhance incentives that promote sustainability there would be value in investing in research to develop new commodities and open up new economic opportunities for stakeholders

7. ***The spatial and temporal scale of management and regulation should be compatible with the ecological and socio-economic scales of the use and its impact (See Ecosystem Approach Principle 2 & 7).***

38. Management and regulation of sustainable use activities should be scaled to the ecological and socio-economic needs of the use. If, for example, fish are harvested from a lake the owner of the lake, should be in charge of, and accountable for, the management of the lake subject to national or subnational policy and legislation. Likewise, if neighbouring countries share a resource then appropriate authority should include representation from those States and all should participate in the management and regulatory decisions about that resource. Accountability over decisions governing multi-jurisdictional shared resources

will remain with the cooperating sovereign states; however, in such cases there is need to promote transparency in decisions by all parties and to foster an approach of joint decision making.

8. ***There should be arrangements for international cooperation where multi-national decision-making and coordination are needed.***

39. If a resource is shared between two or more countries then it is advisable to have a bilateral or multilateral agreement between those states to determine how the resource will be used and in what amounts. Absence of such agreements can lead to each state implementing separate management regimes which, when taken together, may mean that the resource is over-utilized.

9. ***An interdisciplinary, participatory approach should be applied at the appropriate levels of management and governance related to the use.***

40. Sustainability of use depends on factors other than purely biological parameters of the resource being utilized. It is recognized that social, cultural, political and economic factors are equally important. It is therefore necessary to take such factors into consideration and involve the stakeholders, including indigenous and local communities and the private sector, and the people experienced in these different fields, at all levels of the decision making process.

10. ***International, national and subnational policies should take into account:***

a. current and potential values derived from the use of biological diversity;

b. intrinsic and other non-economic values of biological diversity and

c. market forces affecting the values and use.

41. Recent work in calculating the potential costs of replacing natural systems with man-made alternatives has shown that such natural systems should be valued very highly. It follows that international, national and subnational policies that guide trade and development should compare the real value of natural systems against any intended replacement uses before such development is undertaken. For instance, mangroves have the function of fish spawning and nursery sites, erosion and storm surge alleviation and carbon sequestration, spawning. Coral reefs provide protection for juvenile fish and many species as well as coastal zone protection.

11. ***Users of biodiversity components should seek to minimize waste and adverse environmental impact and optimize benefits from uses.***

42. Users should seek to optimize management and to improve selectivity of extractive uses through environmentally friendly techniques, so that waste is minimized, especially in regards to fisheries discards and by-catch, and socio-economic and ecological benefits from uses are optimized.

43. For example, in the energy industry, survey roads are typically 30 meters across. With such roads, there is virtually no chance for the surrounding forest to re-colonize the roadbed. There exists equipment that can "cut" a 2.5 meter swath through the forest which is adequate for seismic studies. In this case the forest is capable of re-colonizing the cleared area.

12. ***The needs of indigenous and local communities who live with and are affected by the use and conservation of biological diversity, along with their contributions to its conservation, should be reflected in the equitable distribution of the benefits from the use of those resources.***

44. Local communities often shoulder significant costs or forgo benefits of potential use of biological diversity, in order to ensure or enhance benefits accruing to others. Many resources (e.g., timber, fisheries) are over-exploited because regulations are ignored and not enforced. When local people are

involved as stakeholders such violations are reduced. Management regimes are enhanced when constructive programs that benefit local communities are implemented, such as capacity training that can provide income alternatives, or assistance in diversifying their management capacities.

13. ***The costs of management and conservation of biological diversity should be internalized within the area of management and reflected in the distribution of the benefits from the use. (See Ecosystem Approach, Sec C, Par 11, Decision V/6)***

45. The management and conservation of natural resources incurs costs. If these costs are not adequately covered then management will decline and the amount and value of the natural resources may also decline. It is necessary to ensure that some of the benefits from use flow to the local natural resource management authorities so that essential management to sustain the resources is maintained. Such benefits may be direct, such as entrance fees from visitors to a National Park paid directly to, and retained by, the Park management authority or indirect, such as stumpage tax revenue from timber harvesting paid by loggers which flows through a national treasury to a local forest service. In some cases license fees for fishing rights are paid directly to the management authority, or to the national treasury.

14. ***Education and public awareness programmes on sustainable use should be implemented and more effective methods of communications should be developed between and among stakeholders and managers.***

46. To ensure that people are aware of the connectivity between different parts of biological diversity, its relevance to human life, and the effects of uses it is advisable to provide means to engage people in education and awareness of the opportunities and constraints of sustainable use. It is also important to educate people on the relationship of sustainable use and the other two objectives of the Convention. An important way to achieve sustainable use of biological diversity would be to have in place effective means for communications between all stakeholders. Such communications will also facilitate availability of the best (and new) information about the resource.

C. Operational Guidelines for the Sustainable Use of Biodiversity Components

47. Sustainable use is not a fixed state, but rather the consequence of balancing an array of factors, which vary according to the context of the use. In addition, the sustainability of uses cannot be expressed with certainty, but rather as a probability that will change if the conditions in which management is taking place change. Sustainability is also dependent on institutional capacities to adapt to changing conditions based on monitoring and feedback. Given the uncertainties, sudden changes and different contexts in which the use of biodiversity is taking place, participants in the previous workshops recognised that sustainable use entails the adaptive management of biological resources, and decided to elaborate on this concept.

48. Progress towards sustainability will require the political will to bring about changes to create the necessary enabling environment at all levels of government and society. The operational guidelines are intended to provide functional advice on the implementation of the principles. This guidance has been developed taking into account regional and thematic differences and best practices and lessons learned that have been documented in case-studies on the sustainable use of biological diversity in different biomes as well as existing codes of conduct, e.g., FAO Code of Conduct on Responsible Fisheries, CITES Non-Detriment Finding Standards. For case studies see document UNEP/CBD/WS-Sustainable Use/4/3.

General Operational Guidelines

49. To operationalize these principles will require an enabling institutional, legal and administrative

structure at all levels of government and society within each Party. Further, to be effective, policies and regulations that are adopted should ensure that the application of the principles is flexible and adaptable to different local realities and adjustable to specific ecosystems, pursuant to the ecosystem approach.

50. In structuring a sustainable use programme and the attendant policies, laws and regulations to implement such a programme, there are a few underlying conditions that should be taken into account in government and natural resource management planning:

- While it is possible to use biodiversity components with ecological processes, species and genetic variability remaining above thresholds needed for long-term viability, it is the responsibility of governments and resource managers to ensure that use does not exceed these capacities. It is crucial that the biodiversity in ecosystems is maintained to ensure that those ecosystems are capable to sustain the ecological services on which both biodiversity and people depend;

- Ecosystems, ecological processes within them, species variability and genetic variation change over time whether or not they are used. Therefore, governments and resource managers should take into account the need to accommodate change, including stochastic events that may influence the sustainability of a use;

- In circumstances where the risk of converting natural landscapes to other purposes, encouraging sustainable use can provide incentives to maintain habitats and ecosystems, the species within them, and the genetic variability of the species. Also, for particular species, such as crocodiles, sustainable use has provided substantial incentives for conserving a dangerous animal that represents a threat to humans;

- The basic necessities of life, such as food and shelter, are produced either directly or indirectly from using biological diversity. In many countries, there is complete or substantial dependence on harvested plants and animals by millions of people, often among the poorest, for their livelihoods. Increasingly other uses such as pharmaceuticals for disease prevention and cure are becoming evident and are also met from using biological diversity. Finally, indigenous and local communities and their cultures often depend directly on the uses of biological diversity for their livelihoods. In all of these instances, governments should have adequate policies and capacities in place to ensure that such uses are sustainable;

- 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. Biological systems, which are dependent on cycling of finite resources, have limits on the goods they can provide and services they can render. Although certain limits can be extended to some degree through technological breakthroughs, there are still limits, and constraints, imposed by the availability and accessibility of endogenous and exogenous resources;

- To ameliorate any potential negative long-term effects of uses it is incumbent on all resource users, to apply every precaution in their management decisions. Likewise, governments should be certain that licensed or authorized sustainable uses of biological diversity are taking such precautions in their management;

- In considering individual guidelines provided below, it is necessary to refer to and apply the provisions of Article 8(j) and related provisions and their development in relevant COP decisions in all matters that relate to indigenous and local communities.

Operational Guidelines in the application of the Practical Principles

51. The Operational Guidelines that follow are set out for consideration by governments, decision-makers, resource managers and users.

Principle 1: Supportive policies, laws, and institutions are in place at all levels of governance and there are effective linkages between these levels.

- Consider local customs and traditions (and customary law where recognized) when drafting new legislation and regulations;

- Identify existing and develop new supportive incentives measures, policies, laws and institutions within the jurisdiction in which a use will take place;

- Identify any overlaps, omissions and contradictions in existing laws and policies and initiate concrete actions to resolve them;

- Strengthen and/or create cooperative and supportive linkages between all levels of governance in order to avoid duplication of efforts or inconsistencies.

Principle 2: Recognizing the need for a governing framework consistent with international, national and subnational laws, local users of biodiversity components should be sufficiently empowered and supported by rights to be responsible and accountable for use of the resources concerned (See Ecosystem Approach Principle 2).

- Where possible adopt means that aim toward delegating rights, responsibility, and accountability to those who use and/or manage biological resources;

- Review existing regulations to see if they can be used for delegating rights; amend regulations where needed and possible; and/or draft new regulations where needed. Throughout local customs and traditions (including customary law where recognized) should be considered;

- Refer to the programme of work related to the implementation of Article 8(j) with regard to indigenous and local community issues (Decision V/16) and integrate tasks relevant for the sustainable use of biodiversity components;

- Provide training and extension services to enhance the capacity of people to enter into effective decision-making arrangements as well as in implementation of sustainable use methods.

Principle 3: International, national and subnational policies, laws and regulations that distort markets and promote habitat degradation or otherwise generate 'perverse incentives' for conservation and sustainable use of biodiversity, should be identified and removed or mitigated (See Ecosystem Approach Principle 4).

- Identify economic mechanisms, including incentive systems and subsidies at international, national and subnational levels that are having a negative impact on the potential sustainability of uses of biological diversity;

- Remove those systems leading to market distortions that result in unsustainable uses of biodiversity

components;

- Avoid unnecessary regulations of uses of biological diversity because it can increase costs, foreclose opportunities, and encourage unregulated uses thus decreasing the sustainability of the use.

Principle 4: Adaptive management should be practiced, based on:

1. ***Science and traditional and local knowledge;***
2. ***Iterative, timely and transparent feedback derived from monitoring the use, environmental, socio-economic impacts, and the status of the resource being used; and***
3. ***Adjusting management based on feedback from the monitoring procedures.***

- Ensure that for particular uses adaptive management schemes are in place;

- Require adaptive management plans to incorporate systems to generate sustainable revenue necessary for successful implementation;

- Provide extension assistance in setting up and maintaining monitoring and feedback systems;

- Include clear descriptions of their adaptive management system, which includes means to assess uncertainties;

- Design monitoring system on a temporal scale sufficient to ensure that information about the status of the resource and ecosystem is available to inform management decisions to ensure that the resource is conserved.

Principle 5: Sustainable use management goals and practices should avoid or minimize adverse impacts on ecosystem services, structure and functions as well as other components of ecosystems. (See Ecosystem Approach Principles 3, 5 & 6)

- Ensure management practices do not impair the capacity of ecosystems to deliver goods and services that may be needed some distance from the site of use. For example, selective cutting of timber in a watershed would help maintain the ecosystem's capacity to prevent soil erosion and provide clean water;

- Ensure that consumptive and non-consumptive use does not impair the long-term sustainability of that use by negatively impacting the ecosystem on which the use depends, e.g., when a tourism operation destroys a coral reef on which it was based;

- Apply the "precautionary principle" to management decisions as provided in paragraph 15 of the Rio Declaration on Environment and Development;

- Identify successful experiences of management of biodiversity components in other countries in order to adapt and incorporate this knowledge in their efforts to resolve their own difficulties;

- Where possible consider the aggregate and cumulative impact of activities on the target species or ecosystem in management decisions related to that species or ecosystem.

Principle 6: Interdisciplinary research into all aspects of the use and conservation of biological diversity should be promoted and supported.

- Ensure that the results of research inform and guide international, national and subnational policies and decisions.

- Invest in research into techniques and technologies of management of biodiversity components that promote sustainability;

- Encourage active collaboration between scientific researchers and people with local and traditional knowledge;

- Encourage and support international support and technology transfer;

- Involve local people who use biodiversity as research partners and use their expertise to assess management methods and technologies;

- Make research results available in a form which decision makers, users, and other stakeholders can apply;

- Promote exchange programmes in scientific and technical areas.

Principle 7: The spatial and temporal scale of management and regulation should be compatible with the ecological and socio-economic scales of the use and its impact (See Ecosystem Approach Principles 2 and 7).

- Link responsibility and accountability to the spatial and temporal scale of use;

- Define the management objectives for the resource being used;

- Enable full public participation in preparation of management plans to best ensure ecological and socio-economic sustainability.

Principle 8: There should be arrangements for international cooperation where multi-national decision-making and coordination are needed.

- Make arrangements for international cooperation when the distribution of populations or communities/habitats being used span two or more nations;

- Promote multinational technical committees to prepare recommendations for the sustainable use of shared resources;

- Have bilateral or multilateral agreements between or among the states sharing the resource;

- Spell out the basis for taking decisions governing sustainable use of shared resources in such agreement.

Principle 9: An interdisciplinary, participatory approach should be applied at the appropriate levels of management and governance related to the use (See Ecosystem Approach Principle 12).

- Consider providing mechanisms that encourage interdisciplinary cooperation in management of biodiversity components;

- Set standards for resource management activities that promote interdisciplinary consultations;
- Facilitate communication and exchange of information between all levels of decision-making;
- Identify all relevant stakeholders and seek their participation in planning and executing of management activities;
- Take account of socio-economic, political, biological, ecological, institutional, religious and cultural factors that could influence the sustainability of the management;
- Seek guidance from local, traditional and technical specialists in designing the management plan;
- Provide adequate channels of negotiations so that potential conflicts arising from the participatory involvement of all people can be quickly and satisfactorily resolved.

Principle 10: International, national and subnational policies should take into account:

1. ***current and potential values derived from the use of biological diversity;***
2. ***intrinsic and other non-economic values of biological diversity and***
3. ***market forces affecting the values and use. (See Ecosystem Approach Principles 4 & 10)***

- Promote economic valuation studies of the environmental services of natural ecosystems;
- Incorporate this information in policy and decision making processes, as well as educational applications, including providing alternative, non-consumptive uses of those resources;
- Consider this principle in relation to land use/habitat conversion tradeoffs. Recognize that market forces are not always sufficient to improve living conditions or increase sustainability in the use of components of biological diversity;
- Encourage governments to take into account biodiversity values in their national accounts;
- Encourage and facilitate capacity building for decision makers about concepts related to economic valuation of biodiversity.

Principle 11: Users of biodiversity components should seek to minimize waste and environmental impact and optimize benefits from uses.

- Provide economic incentives for resource managers to invest in development and/or use of more environmentally friendly techniques, e.g., tax exemptions, funds available for productive practices, lower loan interest rates, certification for accessing new markets;
- Establish technical cooperation mechanisms in order to guarantee the transfer of improved technologies to communities;
- Endeavour to have an independent review of harvests to ensure that greater efficiencies in harvest or other extractive uses do not have a deleterious impact on the status of the resource being used or its ecosystem;
- Identify inefficiencies and costs in current methods;

/…

- Conduct research and development into improved methods;

- Promote or encourage establishment of agreed "industry" quality standards of biodiversity component processing and management at the international, national and subnational levels, e.g., Forest Stewardship Council Guidelines, ITTO Tropical Timber Guidelines, Marine Aquarium Council Guidelines for tropical fish and coral trade;

- Promote more efficient and humane transportation of biodiversity components.

Principle 12: The needs of indigenous and local communities who live with and are affected by the use and conservation of biological diversity, along with their contributions to its conservation, should be reflected in the equitable distribution of the benefits from the use of those resources (See Ecosystem Approach Principle 4 and 1.

- Promote economic incentives that will guarantee additional benefits to the local stakeholders who are involved in the management of any biodiversity components, e.g., job opportunities for local peoples, equal distribution of returns amongst locals and outside investors/co-management;

- *Adopt* policies and regulations that ensure that local stakeholders who are engaged in the management of a resource for sustainable use receive an equitable share of any benefits derived from that use, relating to both consumptive and non-consumptive uses of biodiversity components;

- Consider ways to bring uncontrolled use of biological resources into a legal and sustainable use framework;

- Ensure that an equitable share of the revenues remain with the local people in those cases where foreign investment is involved;

- Involve local stakeholders in the management of any natural resource and provide those involved with equitable compensation for their efforts, relating to both consumptive and non-consumptive uses of biodiversity components;

- In the event that management dictates a reduction in harvest levels, to the extent practicable assistance should be provided for local communities who are directly dependent on the resource to have access to alternatives.

Principle 13: The costs of management and conservation of biological diversity should be internalized and reflected in the distribution of the benefits from the use (See Ecosystem Approach Principle 4).

- Ensure that national and subnational policies do not provide subsidies that mask true costs of management;

- Ensure that harvest levels and quotas are set according to information provided by the monitoring system, not the economic needs of the management system;

- Provide guidelines for resource managers to calculate and report the real cost of management in their business plans;

- Create other alternative mechanisms to invest revenues from biodiversity management;

/…

- Provide economic incentives for managers who have already internalized environmental costs, e.g., certification to access new markets, waiver or deferral of taxes in lieu of environmental investment, promotion of "green-labeling" for marketing.

Principle 14: Education and public awareness programmes on sustainable use should be implemented and more effective methods of communications should be developed between and among stakeholders and managers.

- Plan education and public awareness activities concerning: management, values of sustainable use, changing consumptive patterns and the value of biodiversity in the lives of people;
- Ensure that public awareness programmes also inform and guide decision-makers;
- Target all levels of the chain of production and consumption with such communications;
- Report lessons learned about sustainable use activities to the clearing-house mechanism of the Convention on Biological Diversity;
- Encourage and facilitate communication of lessons learned and best practices to other nations;
- Ensure that resource users report to government on their activities in a manner that facilitates broader communications.

D. Instruments associated with the operational guidelines

52. Implementation of the Principles and Guidelines for the Sustainable Use of Biodiversity will depend on many inter-related factors including, but not limited to, existence of appropriate incentive measures, ability to manage and exchange information and sufficient capacity with which to implement. Several of these issues are being dealt with by other groups within the Subsidiary Body on Scientific, Technical and technological Advice and the particular needs identified within this document should be brought to their attention during detailed discussions. However, the issue of adaptive management, including monitoring and indicators, is of particular relevance to the case on sustainable use and merits more detailed description within this document.

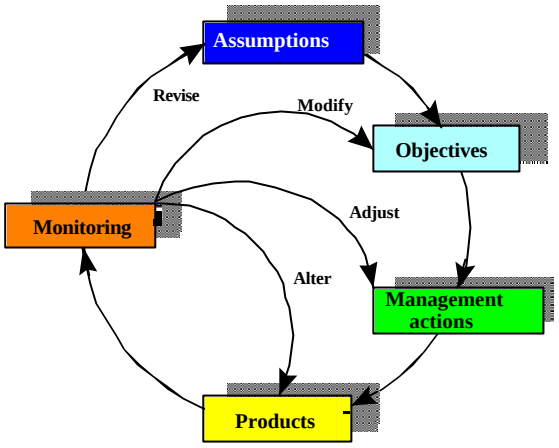
A. Adaptive management

53. Sustainable use is not a fixed state, but rather the consequence of balancing an array of factors, which vary according to the context of the use. In addition, sustainability of uses cannot be expressed with certainty, but rather as a probability that may have to change if the conditions in which management is taking place change. Achievement of sustainability is also dependent on institutional capacities to adapt to changing conditions based on monitoring and feedback. Given the uncertainties, sudden changes and different contexts in which the use of biodiversity is taking place, participants in the previous workshops recognized that sustainable use entails the adaptive management of biological resources, and elaborated on this concept.

54. Because circumstances change and thus uncertainties are inherent in all managed uses of components of biodiversity, adaptive management must be an essential part of any management for sustainable use.

The basic concept is illustrated in figure 1 below.

Figure 1. Feedback loops associated with Adaptive Management



55. Adaptive management is the most appropriate approach toward the management of biological resources because of its ability to deal with the uncertainty and natural variation, its iterative nature of monitoring biological resource through the management cycles, and the feedback/decision-making mechanisms to alter the management. 6/ Adaptive management can be applied at each of the recognized components of biological diversity, where the scale of management (and adaptive-management needs) is determined by the component being used. Adaptive-management systems should operate within the context of national policies concerning the use of biological resources.

56. As illustrated in figure 1, the successful application of adaptive management is dependent on monitoring changes in the indicators being used, which could lead to changes in an array of activities associated with the management system.

57. Effective incentives are necessary for successful sustainable use.

B. Monitoring and Indicators[1]

58. Monitoring is the key component of adaptive management. One of the first steps in monitoring is the establishment of baselines. The monitoring depends on separating exogenous disturbances from management action results. The monitoring requires defining and accepting benchmarks that identify the level beyond which adaptive management action should be implemented.

59. Managers should be accountable and responsible for developing and implementing the monitoring programme. The indicators and benchmarks that form part of that monitoring programme should be agreed upon by all relevant stakeholders including governments and scientists.

60. Adaptive management systems should be designed and refined so that:

6/ See principle 9 of the ecosystem approach recommended by the Conference of the Parties in its decision V/6: "Management must recognize that change is inevitable".

1-see appendix 1- desirable properties for indicators

(a) Monitoring should be bounded by spatial and temporal scales that are relevant to the potential impact, but should not ignore "downstream", indirect [n]or side effects of management (for example, bycatch);7/

(b) In the case of monitoring shared resources, including migratory species, parties should ensure that the monitoring systems are compatible and that the costs and benefits of the monitoring are shared equitably. These issues may require action at higher levels, through, for example, transboundary cooperation, or even cooperation at global levels. [ecosystem approach sec. C par.11, Decision V/6]

(c) The cost of monitoring should be internalized (resource user should contribute significantly) to ensure the maintenance of monitoring programmes; 8/

(d) Resource users should participate in the design and implementation of the monitoring system;9/

(e) Local and traditional knowledge of resources should be incorporated into monitoring systems, (and the use of such local and traditional knowledge in the management of biological resources may promote the maintenance of local and traditional knowledge systems, e.g. in the mapping of resources by communities);10/

(f) Monitoring systems should be appropriate, cost-effective and achievable;11/

(g) Monitoring systems and the evaluation of the results of monitoring should involve a transparent and consultative process;12/

(h) The integrity of monitoring systems can be enhanced by measures for long-term data and information management and exchange;

(i) Monitoring systems should take into account modern techniques for statistical analyses that adequately identify limitations and possibilities of trend analyses.

61. Monitoring of consumptive use should be conducted at the following levels, i.e.:

(a) Monitoring the status of the component of biological diversity that is the focus of the management programme (in order to obtain information about its status independently from any harvest programme) and monitor the services it can provide;

(b) Monitoring the off-take (in order to obtain detailed information about the biological characteristics of the component consumed, and trends in characteristics such as age and sex distribution and fecundity) and the direct and cumulative impacts of the uses on goods and services;

7/ See principle 3 of the ecosystem approach.

8/ See principle 4 of the ecosystem approach.

9/ See principle 2 of the ecosystem approach.

10/ See principle 11 of the ecosystem approach.

11/ See principle 12 of the ecosystem approach.

12/ See principle 11 of the ecosystem approach.

(c) Monitoring harvest effort (in order to determine changes in the yield per unit effort as an index of the impact of the management programme, taking into account improvements in technology and practice relating to the efficiency of harvesting);

(d) Monitoring indirect impacts, downstream and side effects of the consumptive use, or use associated activities on other species (in order to obtain information about this status independently from any other consumptive use programme).

62. Monitoring of non consumptive use can be conducted at the following levels;

(a) Monitoring the status of the component of biological diversity that is the focus of the management programme and monitor the services it can provide;

(b) Monitoring indirect impacts, downstream and side effects of the non consumptive use.

63. Monitoring of both consumptive and non consumptive use need not be conducted at the same frequency and by the same agencies, but the combination of monitoring may result in a greater probability that use-related impacts will be detected and that monitoring systems will be maintained in the long term. Monitoring at multiple levels is particularly important in cases where limited information is available about the current status of the component of biological diversity that is being used, or to avoid bias resulting from information derived as the result of use. (eg. harvesting is most often targeted at specific components only).

64. It is important to consider impacts on a resource other than influence by direct management actions, such as illegal off-takes, and to use all other relevant sources of information to verify conclusions about the trends in resource status and recommendations concerning its management.

65. Indicators within the context of sustainable use were defined to describe; status of a system, change in a system, trends in a system, combinations of the above. Desirable characteristics of indicators are included in Appendix 1.

66. Indicators are a practical tool for achieving sustainable use as referenced in:

i) Art. 2 "Sustainable use" means 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;**

ii) Art. 6 (a) Develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programmes which shall reflect, *inter alia*, the measures set out in this Convention relevant to the Contracting Party concerned;

iii) Art. 10 (a) Integrate consideration of the conservation and sustainable use of biological resources into national decision-making;

iv) Art. 10 (b) Adopt measures relating to the use of biological resources to avoid or minimize adverse impacts on biological diversity;

v) Art. 10 (c) Protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements.

67. Indicators are being developed at various scales. Some will be national context, some will be management area indicator. It is important for managers/planners to include in the monitoring system indicators relevant to their specific situation. Managers should be aware that there are many existing sources of information on indicators (e.g. FAO, Agenda 21, UN System Wide Earth Watch Indicators, World Bank).

I. Biological Context

68. Annex I to the Convention indicatively identifies three components of biodiversity: ecosystems and habitats; species and communities; genomes and genes. The workshops listed five components (genetic material; populations; species; communities; and ecosystems, habitat, vegetation cover and other aggregate terms, that denote the other biotic components of ecosystems 13/) and for each of those developed a set of indicators to measure their decline. In this biological context, indicators were identified for the components of biological diversity that can be subject to use. The assessment of the sustainability of use on a particular component will largely depend on the scale and extent of use. The components of biological diversity are nested. Indicators of sustainability should be applied to the component of biological diversity that approximates the unit of management.

69. The indicators outlined in the table were identified as suitable to demonstrate the impact of use, and only refer to the biological status of each component of biological diversity.

70. In line with the charge to the working group to develop indicators to detect decline in the status of biodiversity components Table 1 below sets forth the basis of declines in status. In the event that a decline is detected in any one or more categories of biodiversity components, it would prompt remedial management action.

71. The indicators outlines in Table 1, based on definitions of components of biodiversity mentioned in the introductory part of the annex, were identified as suitable to demonstrate the impact of use, and only refer to the biological status of each component of biological diversity.

Table 2: Indicative list of indicators for measuring the decline in the status of categories of biodiversity components.

Category of component	Parameters measured	Elements to be assessed	Indicators
Genetic material	A measurable reduction in any appropriate measure of genetic diversity in a population.	**Genetic material**	• genetic variation • frequency of rare alleles • Traditional varieties, cultivars and breeds • ecotypes

13/ This component was inspired by the definition in Article 2 of "biological resources" and by decision V/23 of the Conference of the Parties (activity 7 (b): "The sustainable use or husbandry of plant and animal biomass …").

Category of component	Parameters measured	Elements to be assessed	Indicators
Populations	A measurable reduction in the distribution and numbers of individuals of a population or increase in fragmentation or decrease in size of population range	**Population size**	• number of individuals (and other indices of abundance) • biomass or volume • density
		Extent of distribution	• extent of occurrence (sq. km) • area of occupancy (presence/absence) • area of habitat loss • evenness of distribution
		Fragmentation	• number of sub-populations • area of habitat loss • change in habitat
		Population structure	• age structure • sex ratio
		Production potential	• reproductive success and recruitment • fecundity • physical/physiological condition
Species	A measurable change of the total number of individuals, populations or geographical races of a species or increase in fragmentation or decrease in size of a species' range below the limits necessary for the maintenance of viable populations".	**Population size**	• number of individuals (and other species of abundance) • biomass or volume • density
		Geographical races, populations, and sub-species	• number of geographical races • number of populations • number of sub-species

Category of component	Parameters measured	Elements to be assessed	Indicators
		Variability of populations	• extent of decline and proximity to thresholds of viability • vulnerability
		Fragmentation	• number of fragments (sub-ranges) and distance between fragments • connectivity • form and size of fragments
		Extent of distribution	• extent of occurrence • area of occupancy • area of habitat loss
Communities	A measurable change in the number, variety and composition of non alien species within a defined management area	**Number of species (species richness)**	• total number of species per specified management area
		Variety of species (diversity of species)	• appropriate index of community diversity • species/biomass relationship • species/abundance relationship

		Composition of species	• changes in species inventories • predators and top predators as indicators species • structurally dominant species • trophic relationships • bio-monitors (e.g. diet of selected species) • endemic species • number of threatened species (at different scales) • number of alien species • categories of species of special significance.
Component	**Decline**	**Elements of decline**	**Indicator**
		Community stress	• any appropriate indicator of stress (e.g. invasive species) • decline in extent • increase in fragmentation • abnormal mass mortality
Ecosystems, habitats and other aggregated terms	A measurable reduction in the extent or amount of the biological component within the management area; a measurable decrease in the provision of ecosystem services[1] and goods [1] see COP decision VI/7 appendix 3 for description of	**Extent and amount of ecological services that can be provided**	• components of ecosystem • coverage (e.g. vegetation, coral reefs) • fragmentation (including measures of distribution, heterogeneity and connectivity) • fractal dimension, size and shape of patches • standing biomass

	services.		• albedo, spectral reflectance • turbidity, light penetration • primary production • secondary production • keystone species • top predators • pollinators

II. Economic Context

72. Economic indicators are essential in indicating status, change and trends of use of biological components of biodiversity in economic terms. Indicators can be used to assess sustainability of the use. For example; the degree to which biological resources are priced and reflect true value, being a condition for effective management, may serve as an economic indicator. Some useful example are:

a. Maximum sustained yield for a renewable biologic resource being used;

b. Household income;

c. Market prices of components;

d. Volume of natural resource products on the market;

e. Household food security;

f. Percent contribution of managed resource to green and net domestic product;

g. Earned revenue from biological resource management (e.g. nature tourism);

h. Market prices for ecological goods and services from biodiversity;

i. Market value of environmental permits traded or sold;

j. Value of exported environmental services, products and technologies.

III. Social Context

73. Social indicators reflect social values with respect to the sustainable use of biological components. The indicators identified below are suitable examples to demonstrate:

- the incorporation of social values into the use of biological resources;
- how unique needs of individuals and communities are considered in management decisions;

/…

- and the extent to which the allocation of resources can be considered to be fair and equitable.

a. Percent of public participation in design, decision making and implementation of monitoring of sustainable use management programme;

b. Number of benefit-sharing arrangements and schemes associated with the particular programme;

c. Number of Laws and regulations implemented and enforced (i.e. # of successful conviction for illegal off take) [Corrected for enforcement effort];

d. Protected areas as a percent of total area;

e. Dependence of local and indigenous people on particular components of biological diversity (eg. bushmeat/wild meat);

f. Demographics (population, poverty, distribution);

g. Percent ownership of particular biological resource (public, private ownership, or other groups);

h. Number Laws or regulations or best management practices pertaining to sustainable use of biological resources;

i. Rate of change of wilderness areas.

IV. Cultural Context

74. All cultures use aspects of biological diversity for the maintenance of their cultures. Therefore using indicators to monitor sustainable use in a cultural context is important to understand the impact of the use upon cultures, and vice versa. Cultures need to be defined beyond indigenous groups; to include the believes, customs, practices and social behavior of all people.

a. Components of biological diversity used for cultural purposes;

b. Number of new initiatives;

c. Effectiveness of traditional norms and their enforcement on the use of the components of biological diversity;

d. Percentage of women/men participating in resource extraction and decision making;

e. Size of culturally cohesive local /traditional indigenous groups;

f. Percentage of involvement of indigenous peoples in management decision making process;

g. State of traditional biodiversity component management practices;

h. Proportion of formal and informal leadership involved in sustainable use programs;

i. Number and extent of sacred sites;

j. Number of active nature(conservation) based NGO's;

k. Number of cultural-based off take permits.

Appendix I Desirable properties of indicators

Indicators of the status and trends of biological diversity are important in a monitoring programme. Recommendation III/5, endorsed by the Conference of the Parties at its 4th meeting (decision IV/1A), and decision V/7 provide for the development of a set of principles for designing national-level monitoring and indicators, addressing issues such as:

i) the way that indicators relate to management questions;
ii) the ability to show trends;
iii) the ability to distinguish between natural and human-induced change;
iv) the ability to provide reliable results (i.e. through the establishment of standard methodologies);
v) the degree to which indicators are amenable to straightforward interpretation; and
vi) the question of baselines for measurement, in light of the fact that application of a pre-industrial baseline may often prove problematic.

The workshop noted that adaptive management does not rely on knowing pre-industrial baselines and has used the issues outlined in recommendation III/5 as a starting point, but has added the ability to distinguish between external and internal causes of change. The workshop has identified the following desirable properties of indicators. The validity of indicators will be enhanced if they have as many of the following properties as possible, i.e. if they are:

- *unequivocal and reliable descriptor of a specific measurable characteristic*: This property describes the bare essence of an 'indicator'(see issue i and iv);

- *sensitive to changes in components and systems subject to impact of use*: An ideal indicator should detect a signal of real change fast and reliably and should be robust (i.e. so that a measuring error does not affect the interpretation) (see issue ii and iv);

- *viable*: The costs of measuring the indicator should be proportional to the benefit from using the biological resource;

- *amenable to the use of appropriate technology*: Some technologies may become outdated due to rapid technological changes, but many user groups, including local and indigenous ones, readily accept new technologies (see issue iv);

- *repeatable*: The aim of using indicator is to determine whether there are long-term negative trends in the availability of the biological resource, and the measurement of any indicator should accordingly be repeatable. It is therefore imperative that the measurement is cost-effective and amenable to using appropriate technology (see issue ii);

- *relevant to the impact of management*: The purpose of using indicators is to measure the impact of management on the status of a biological resource, and, ideally, it should enable the resource manager to distinguish between natural and human-induced change. It is consequently important that the measurements are conducive to sound analysis (see issue i and iv);

- *acceptable to all stakeholders by mutual agreement*: The repeatability of measurement often depends on the fact that measurement has to be carried out by resource managers who, in many cases, will be people living with the resource. The data that are collected should, on the other hand, be open to sound analysis and acceptable as reliable descriptors of change. Data should be accessible for inspection by either higher authorities or by other interested parties including groups of civic society;

- *user-friendly for resource managers/users*: Methods for measuring indicators should be user-friendly or users may lose their interest and cease measuring, which negatively affects repeatability;

- *appropriate to the scale of management*: The measurement of indicators should not result in making statements at the "wrong" scale; if resource management has to take place at e.g. a large scale and indicator measurement takes place at a small scale, then trend analysis may sometimes lead to "false alarm" or to a 'false sense of security';

- *appropriate to the social and cultural contexts of resource managers/users*: The repeatability and accuracy of measurement of an indicator will be enhanced if the indicator is meaningful in the social and cultural contexts of resource managers/users;

- *able to show trends*: This property is a fundamental requirement of an indicator that has been selected to be able to detect trends in the state of a biological resource (see issue ii);

- *conducive to sound analysis*: Sound analysis often may mean proper statistical analysis but as there are other knowledge systems that do not rely on classical statistical methods or Bayesian methods, other ways of sound analysis may be envisaged too (see issue v).

ANNEX II

Recommendations

The Fourth Open-ended Workshop on the Sustainable Use of Biodiversity recommended that:

Parties, other Governments and relevant organizations:

1. *Integrate* and *mainstream* the Addis Ababa principles and guidelines on the sustainable use of biodiversity into national legislation and other regulations, sectoral and cross-sectoral plans and programmes addressing consumptive and non consumptive use of biodiversity, and share experiences on the use of such principles and guidelines;

2. *Develop* or *strengthen* capacity for implementing and using the principles and operational guidelines including, in particular, the capacity for monitoring and assessing biodiversity components and using indicators and impact assessment tools ;

3. *Incorporate* the Addis Ababa principles and guidelines into the Global Initiative on Communication, Education and Public Awareness so as to build a common understanding of the issues pertaining to the sustainable use of biodiversity in all sectors of the society;

4. *Develop, use* and *share* experiences on positive incentives for the sustainable use of biological diversity.

The Executive Secretary:

5. *Continue* gathering and compiling case studies that can illustrate the importance of the Addis Ababa principles and guidelines for the sustainable use of biodiversity, in different thematic areas and geographical contexts. Case studies should follow a format prepared by the Executive Secretary. Lessons learned from the case studies could be used to further elaborate and/or refine the Addis Ababa principles and guidelines;

6. *Gather* information and experiences on how sustainable use of biodiversity can contribute to the achievement of the biodiversity target of significantly reducing the rate of biodiversity loss by 2010 and how sustainable use can contribute to sustainable development;

7. *Undertake* further work in collaboration with relevant organizations investigating:

(i) the impacts of sustainable use and non sustainable use on livelihoods, and ecosystems goods and services;

(ii) the role of women and other major groups in the sustainable use of components of biodiversity;

(iii) the relationship between resilience of ecosystems and the sustainable use of biodiversity;

(iv) the terms used in the description of sustainable use, in particular what "long term decline" of biodiversity should mean in concrete terms, taking into account the aspirations of present and future generations in different regions and situations;

/…

(v) the elaboration of management plans at time scales appropriate to the life history of species or populations;

(vi) the applicability of the Addis Ababa principles and guidelines on the use of components of biological diversity that are subject to multiple jurisdictions, (e.g. a resource shared between different countries, or migratory species moving across national jurisdictions), in collaboration with relevant international agreements (such as the Convention on Migratory Species);

(vii) the functional relationships between different components of biological diversity in the context of sustainable use.

8. *Take* the Addis Ababa Principles and Guidelines into account while reviewing the principles and guidelines of the ecosystem approach;

9. *Integrate* the work on indicators developed by the workshop with the broader work undertaken pursuant to decision IV/7 on the "identification, monitoring, indicators and assessment". In particular, indicators of external influences (e.g. pollution, natural disasters, poverty, foreign debts, refugees and displaced persons) should be developed/identified;

10. *Invite* the Expert Meeting on Incentive Measures, which will take place in Montreal in June 2003 to provide information on ways and means to reduce or mitigate perverse incentives for the sustainable use of biodiversity.
