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HANOI GUIDING PRINCIPLES ON SUSTAINABLE USE OF BIOLOGICAL DIVERSITY WITH RATIONALE

The Secretariat of the Convention on Biological Diversity is herewith circulating the "Hanoi guiding principles on sustainable use of biological diversity with rationale". The document has been prepared taking into account comments and suggestions to develop the rationale of the guiding principles received by the Secretariat from the participants to the second regional workshop on sustainable development on biological resources, Hanoi, Vietnam.

HANOI GUIDING PRINCIPLES ON SUSTAINABLE USE OF BIOLOGICAL DIVERSITY WITH RATIONALE

Participants to the Hanoi Workshop built on the outcome of the Maputo meeting and further elaborated the Maputo Axioms and Principles. In addition, the participants noted there was a need to define some terms contained in the Convention, which meaning and interpretation could have a significant influence on the process to elaborate principles and operational guidelines for the sustainable use of biological diversity and in their understanding and implementation.

USE OF TERMS

The participants noted that the articles of the Convention related to sustainable use contain words for which further clarification was needed. It was felt that there were several other words used in sustainable use for which it would be advisable to provide working definitions. Examples of such words/terms are "components" (of biological diversity), "decline" and "long-term". In such cases the participants felt that there was a need to provide advice/interpretation to assist the Parties' understanding/implementation of any principles of sustainable use. The participants did not feel it necessary to provide a definition/interpretation in those instances where words/terms were either defined previously in the Convention, or were being addressed by other initiatives.

'Components' of biological diversity

The objectives of the Convention on Biological Diversity are "the conservation of biological diversity, the sustainable use of its **components** and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources".

It is considered that these components will include:

(a) genetic material. The definition is given in Article 2 of the Convention.
(b) species. Groups of populations which can potentially interbreed or are actually interbreeding, that can successfully produce viable, fertile offspring (without the help of human aprticipation).
(c) populations. Those individuals of a species occurring in a defined area. Populations may include metapopulations which are a number of populations of the same species linked through genetic exchange, often in an ecological network.
(d) communities. An assemblage of interacting populations species in a defined area (an ecosystem)
(e) other aggregated terms that denote the "other biotic components of ecosystems" such as forests, coral reefs and other undifferentiated vegetation cover.

'Decline' of components of biological diversity

To assess the decline of the components of biological diversity, one has to define what is understood by the term *'decline'*. To be useful to the Convention any definition of 'decline' should allow distinct measurement of such decline.

The following operational definitions are provided for "decline" in the context of sustainable use in regards to the different components of biological diversity:

Genetic material:

A measurable reduction in any appropriate measure of genetic diversity in a population.

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.

Population:

A measurable reduction in the distribution and numbers of individuals of a population or increase in fragmentation or decrease in size of population range.

Community:

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

Other aggregated terms that denote the "other biotic components of ecosystems" such as forests, coral reefs and other undifferentiated vegetation cover:

A measurable reduction in the extent or amount of the biotic component within the management area.

A measurable decrease in the provision of ecosystem services.

'Long term' declines

In considering what is meant by long-term and to meet the requirement that biological diversity be maintained for future generations (Article 2), the working group recommends that the target for maintaining biological diversity should be no net loss of biological diversity measured over five human generations or 100 years, whichever is shorter.

Vision and goals

In addition, it would be useful to develop a vision and goals for the different components of biological diversity described above.

The vision is suggested to be "The rationale for maintaining the components of biological diversity is to avoid loss of the actual and potential benefits provided for present and future generations of people and the maintenance of the integrity of the earth's life support systems".

The secretariate should consider asking the participants of the Ecuador workshop to consider suitable goals for the different components of biological diversity for presentation to the COP or suggest an alternative method for arriving at such goals.

Relevance to Ecosystem Approach

Maintenance of ecosystems is essential to ensure delivery of goods (e.g., clean water, fertile soils, clean air) and services (e.g., carbon sequestration, water filtration, oxygen production). Unsustainable uses of species and habitats can adversely affect the delivery of such ecosystem goods and services.

The Axioms and Principles of sustainable use developed at the Hanoi Workshop are interlinked, and should be considered in relation to each other. They should also be seen as supporting or complementing those Principles of the Ecosystem Approach previously adopted by the Parties. They should not be viewed as prescriptive guidance – but rather as a broad framework of key factors or conditions which governments, resource managers, and other interested stakeholders should consider to optimise the sustainability of uses of biological diversity.

They provide a framework within which those who have responsibility for managing biological diversity for sustainable use can be accountable for their actions. But, again, it most likely will require different institutional structures for different modes of use. In all cases management should be directed at reducing the risk of compromising key functions at the ecosystem level and thus should be done with precaution.

Sustainable use, both consumptive and non-consumptive, is increasingly viewed as a dynamic process toward which one strives in order to maintain biodiversity and enhance ecological and socio-economic services for livelihood security. In the context of the Asian region, these axioms and principles apply equally to both consumptive and non-consumptive uses of biological diversity.

Axioms

Axioms, as used here, are considered universal truths. They are provided in this format to establish a common ground in relation to which a series of principles derived from this workshop are presented. They have been developed in the context of forest ecosystems with the emphasis on the Asian region and they have been inspired by the work of the Maputo Workshop. These axioms are intimately linked together and must be read in total. It should be noted that in the axioms and principles the rationale statement is included to aid in the interpretation of the particular axiom or principle.

Ecological context

1. *Ecosystems, ecological processes within them and genetic variation change over time whether or not they are used.*

   Rationale:The fossil record clearly shows that ecosystems and the species within them change over time in the absence of human influence and use.

2. *Sustaining biological diversity along with resilience of ecosystems depends on maintaining ecological processes and species above thresholds needed for long-term viability.*

   Rationale:Ecosystems can continue to function when some processes or components are degraded or missing. However, if such degradation continues there will come a point beyond which an ecosystem cannot function and its processes will break down. It is obviously important that such 'thresholds of viability' are not exceeded. The problem is that these thresholds are unknown and therefore it is prudent to prevent losses of ecosystem components and function wherever possible.
   Just as ecosystems cannot continue to function with increasing losses of components so the components themselves (such as biological diversity) cannot survive without the ecological functions necessary to keep those components alive. Once again there will be thresholds below which such ecological functions and species numbers and diversity must not drop lest ecosystem collapse occurs.

3. *Biological diversity has an intrinsic limit to the benefits it can provide.*

   Rationale: Systems dependent on cycling of finite resources have limits on what products can be extracted from them. Biological systems are no different, there are finite amounts of resources contained within such systems and consequently limits on the amounts of those resources that can be used. Although certain limits can be extended to some degree through technological breakthroughs, there are still limits originated by energy availability and accessibility. Consequences of overuse only become apparent sometime in the future so it is prudent to adopt a precautionary attitude and assume that there are limits to use of biological diversity.

Social context

4. *Biological diversity is used.*

   Rationale: Humans use biological diversity every day in numerous ways. Harvesting of natural and cultivated plants and wild and domestic animals for food and other products, timber for building materials, extraction of chemicals for drugs and the use of plant products for clothing are all examples of such daily use.

5. *Survival of people and cultures is dependent on direct and indirect uses of biological diversity.*

   Rationale: The basic necessities of life such as food and shelter are produced either directly or indirectly from using biological diversity. Increasingly other uses such as pharmaceuticals for disease prevention and cure are becoming evident and are also met from using biological diversity. Some people and their cultures depend more directly on the uses of biological diversity for their livelihoods

6. *Use of biological diversity can take place with ecological processes, species and genetic variability remaining above thresholds needed for long-term viability*

   Since they first evolved humans have been using biological diversity. For the greater part of human history such use has not led to any loss of ecological processes, species or genetic diversity as long as the use was within sustainable limits.

7. *Current human population growth and consumptive patterns are placing increasing demands on biological diversity, the consequences of which become apparent only sometime in the future.*

   Rationale: Disease prevention and increased food production has resulted in greatly increased human population growth. This, coupled with a desire to improve living conditions has led to human populations using a greater variety and amounts of natural resources, including biological diversity and at increasing rates. There is a difference between ecological time scales and socio-political time scales and therefore there is a delay between decisions made today regarding the use of biological diversity and their outcomes and effects.

8. *Sustainable use of biological diversity is a means to conserve genetic variability, species and habitats.*

   Rationale: If sustainable use of biological diversity is prevented in a particular area then that area may be converted to another use and the biological diversity removed. So encouraging sustainable use is a way of maintaining habitats, the species within these habitats and the genetic variability within the species.

9. *Sustainable use of biological diversity is a means of realizing its market and non-market values.*

   Rationale: If a component of biological diversity is used for human benefit then it is more highly valued than a component that has no benefit to humans. This value may be monetary but could equally be aesthetic, cultural or social.

10. *Sustainable management is crucial for the survival of some habitats.*

Rationale: Some habitats depend on management for their survival. For example, agricultural upland meadows in central Europe are maintained by grazing of stock in appropriate densities. Many tropical savanna woodlands need regular fire events to promote seedling establishment.

11. *Sustainable use is crucial for the survival of threatened species.*

Rationale: The saltwater crocodile in northern Australia has been brought back from the brink of extinction by sustainable of their populations. White Rhino have likewise benefited from sustainable use of populations which were at low levels. If these uses were prevented then the conservation status of the animals would most likely decline.

12. *Maintenance of biological diversity is enhanced when the people living with it derive benefits from its sustainable use.*

Rationale: If people are prevented from using biological diversity in their local area then that area may be converted to another use and the biological diversity removed. People who live with biological resources often have to endure adverse effects from those resources. This is most evident where people share space with large, potentially dangerous animals. In order to conserve such species any use of them must allow for benefits from the use to flow to those local people who suffer from the presence of those animals with livestock and crops destroyed and lives lost. If no benefit is seen to come from such species then local people will not view them as a resource but as a menace and treat then accordingly by trying to eliminate them.

13. *Biological diversity conservation will be enhanced when incentives outweigh disincentives.*

Rationale: If humans derive greater benefit from the use of biological diversity than non-use then the biological diversity will be valued and conserved. However the benefits of such conservation may not be immediate so it is important that people are encouraged to conserve by placing appropriate positive incentives before them and acting to eliminate perverse incentives.

14. *Conserving and sustainably utilizing biodiversity varies from one location to another and is a matter of societal choice.*

Rationale: What may be acceptable sustainable use of biological diversity in one area may not be acceptable in another. The acceptance of use may depend heavily on the culturally or socially accepted norms of the society in which the particular use takes place. For example hunting may be acceptable in one culture but not in another.

PRINCIPLES

Guidance is intended to be a functional advice on the practical implementation of the particular principle in question. It is likely that such guidance will be further expanded in the future as case studies about sustainable use in different biomes are examined.

Legal Policy Framework

1. Sustainability of uses of biological diversity will be enhanced if governments devolve rights, responsibility and accountability to those who use biological resources.

Rationale: Resources viewed as common property are often over utilised as people try to maximise their personal benefits from the resource while it is available. Resources that are owned by individual people or communities are generally used more responsibly because their need to maximise benefits before someone else is removed. Therefore sustainability is enhanced if Governments grant 'rights' or 'stewardship' authority, responsibility and accountability to the people who manage the resource.

Guidance:

- The means of conserving and sustainably utilizing biological diversity and the allocation of responsibility for its management varies from one location to another and is a matter of societal choice and different bundles of rights should be implemented in harmony with each society's traditions.

- Individuals, communities, and/or other entities, including public, private and non–government organisations must be made responsible for the management of biological diversity.

2. *Sustainability of uses of biological diversity will be enhanced if those who conserve, use or manage biological resources are sufficiently empowered and supported by established rights to be responsible and accountable for their use.*

Rationale: To reinforce local rights or stewardship of biological diversity and responsibility for its conservation, resource users must participate in making decisions about the resource use and have the authority to carry out any actions arising from those decisions.

Guidance:

- To ensure that those conserving, managing or using biological diversity can meet responsibility requirements, there is need to ensure that they have the needed capacity and sufficient financial resources.

3. *Sustainability of uses of biological diversity will be enhanced if supportive incentives, policies, laws, and institutions are in place at all levels of governance and that there are effective linkages between these levels.*

Rationale: There is little point in developing a use structure at village or community level if the national law prohibits the use of the resource or an international agreement severely limits access to free markets. There must be clear and effective linkages at and 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 markets without impediment.

4. *Managerial regimes are compatible with the ecological and socio-economic scale of the use and impacts.*

Rationale: If fish are being harvested from a lake and that lake is on the property of a single individual then it is that individual who should have the authority to make management decisions about that harvesting. Likewise if neighbouring countries share a resource then appropriate authority would include representation from those states and all should participate in the management decisions about that resource and be accountable for the use.

Guidance:

- Sustainability of uses of biological diversity will be enhanced if management rights are compatible with the ecological and socio-economic scales of the management regime, taking into account impacts of a use.

- Linking responsibility and accountability to the ecological/geographic scale of use is reflected in Principles 2 and 7 of the Principles of Ecosystem Approach.

5. *Sustainability of uses of biological diversity will be enhanced if arrangements for international cooperation are facilitated where multi-national decision-making and coordination are needed.*

Rationale: 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, taken together, may mean that the resource is over-utilised.

Guidance:

- Arrangements for international cooperation are particularly important when the distribution of populations or communities/habitats being used span two or more nations.

6. *Sustainability of uses of biological diversity will be enhanced if national and international policies, laws and regulations that distort markets, promote habitat alteration or destruction, and unsustainable use are identified and removed or adjusted.*

Rationale: National and international policies can act in previously unforeseen ways to promote unsustainable use. For example, giving developing countries preferential access to markets in developed nations for food commodities has caused serious biological diversity conservation problems associated with the alteration of habitats in those producing countries.

Guidance:

- Over regulation of uses of biological diversity can increase costs, foreclose opportunities, and encourage unregulated uses thus decreasing sustainability of uses.
- Likewise, total lack of governmental control of uses may decrease sustainability of uses.

7. *Sustainability of uses of biological diversity will be enhanced if national and international policies and decisions affecting the use of biological resources are supported by sound scientific information and take full account of these guiding principles.*

Rationale: International conventions and national decisions that affect trade should always use the best scientific information on which to base decisions and be aware of the local circumstances where a use is undertaken.

8. *National and international policies recognize and take into account all values derived from the use of biological diversity and the market forces affecting the use.*

Rationale: Biological diversity has often been ignored in pursuing economic development. 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 national and international policies that guide trade and development should compare the real value of natural systems against any intended replacement uses before such development is undertaken.

Guidance:

- It is particularly important that this principle be considered in relation to land use/habitat conversion tradeoffs.
- Governments should consider how national "green" accounts can accommodate these values.

9. *Sustainability of uses of biological diversity will be enhanced if appropriate administrative, market and/or communal mechanisms are used to guide financial and human resource allocation.*

Rationale:

10. *Sustainability of uses of biological diversity will be enhanced if efficiencies in harvest, processing, marketing and use of products are increased to enhance socio-economic and ecological benefits.*

Rationale: All aspects of the sustainable use of biological diversity should be as efficient as possible to maximise returns from that use. These returns should be used to enhance peoples' livelihoods and protect habitats and communities that contain the used biological diversity.

Framework for Management

11 Sustainability of uses of biological diversity will be enhanced if an interdisciplinary, participatory approach is applied at different levels of governance related to the use.

Rationale: Sustainability of use depends on factors other than purely biological parameters of the resource being utilised. It is recognised that social, cultural, political and economic factors are equally important. It is therefore necessary to take all of such factors into consideration and involve the expertise of people experienced in these different fields, at all levels of decision making.

Guidance:

- Interactive communications are in place between and among stakeholders at the individual, community, sub-national, national, regional and international levels.

- Socio-economic, political, biological, ecological, institutional, religious and cultural factors are considered, at the individual, community, sub-national, national, regional and international levels in an interdisciplinary approach.

- The term "interdisciplinary, participatory approach" is used to mean that the specialists in the social, economic, biological and other disciplines necessary to optimize sustainability of uses engage in resource management simultaneously in direct communication with each other, and applying their expertise to a common goal and not to a disciplinary one.

12 Sustainability of uses of biological diversity will be enhanced if effective communications are in place between and among stakeholders, including resource managers, at the individual, community, sub-national, national, regional and international levels.

Rationale: Effective communications between all stakeholders are necessary to ensure that decisions are based on the best information and that new information about the resource that could affect the use is disseminated quickly.

Guidance:

- It is essential that such communications are interactive and participatory and involve all people at levels noted.
- Governments should provide adequate channels of negotiations so that potential conflicts arising from the participatory involvement of all people can be quickly and satisfactorily resolved.

13 *Sustainability of uses of biological diversity will be enhanced if adaptive management is practised and relies on sound science and traditional and local knowledge and an iterative process of timely and transparent feedback derived from monitoring the use, the socio-economic effects, the resources and ecological changes.*

Rationale: Biological systems and the economic and social factors that can affect the sustainability of use of biological diversity are all highly variable. It is not possible to have up-front knowledge of all aspects of such systems before a use of biological diversity begins so it is necessary to have in place an effective system which allows the use to take place but which monitors the effects of that use and allows adjustment of the use as necessary. It is preferable to use all sources of information about a resource when deciding how it can be used. There may be good scientific information about a resource and its use may seem feasible but the use may be against cultural beliefs or social norms of the society in which the use will take place. Under such circumstances the use will not be sustainable. 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.

14 *Sustainability of uses of biological diversity will be enhanced if, in all cases, management goals and practices do not compromise ecosystem functions and are implemented with precaution and care.*

Rationale: 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, it may be possible to selectively harvest trees in a watershed for the timber resource. Clear felling in the 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.

Guidance:

- Precaution in this context is consistent with the definition of the "precautionary principle" provided in paragraph 15 of the Rio Declaration.

15 *Sustainability of uses of biological diversity will be enhanced if research into all aspects of the use and conservation of biological diversity is promoted and supported.*

Rationale: Government and private sector research into natural resource management technology and techniques use is vital to promote sustainability. Further, to enhance incentives that promote sustainability there is need to discover new commodities, open up new economic opportunities for stakeholders and formulate new conservation approaches.

16 *Sustainability of uses of biological diversity will be enhanced if the contribution and needs of those who live with and are impacted by the use and conservation of biological diversity, in particular indigenous peoples and local communities, are appropriately reflected in the distribution of the benefits from the use of those resources.*

Rationale: People who live with biological resources often have to endure adverse effects from those resources. This is most evident where people share space with large, potentially dangerous animals. In order to conserve such species any use of them must allow for benefits from the use to flow to those local people who suffer from the presence of those animals with livestock and crops destroyed and lives lost. If no benefit is seen to come from such species then local people will not view them as a resource but as a menace and treat then accordingly by trying to eliminate them.

(and/or) Local people often shoulder significant costs or forego benefits of potential use of biological diversity, in order to ensure or enhance benefits accruing to others. Innovative mechanisms can be established to compensate local people for the costs of foregone benefits such as through transfer payments made to upland farmers or communities in exchange for protecting watersheds that supply downstream residents.

17 *Sustainability of uses of biological diversity will be enhanced if the costs of those who manage biological diversity, in particular wild living resources, are appropriately reflected in the distribution of the benefits from the use of those resources.*

Rationale: The management 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 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

18 *Sustainability of uses of biological diversity will be enhanced if provisions are made for mitigation, remediation, compensation, and/or rehabilitation if losses of biological diversity as a result of use are identified.*

Rationale: Selective felling of trees in a watershed may be permitted if the removal does no lasting damage to that watershed. To ensure that there is no damage, provision should be made for using appropriate methods to minimise damage and timely repair of any damage that may occur. If

certain areas are necessary for development purposes then there should be adequate provision of protected areas containing representative samples of the biological diversity of the area. These protected areas should be linked to minimise losses of biological diversity. If those losses of biological diversity cannot be avoided, then adequate ecological remediation and/or rehabilitation should be attempted as well as socio-economic compensation. (← added by Jorge Rabinovich)

19 *Sustainability of uses of biological diversity will be enhanced if appropriate measures are taken for the protection of biological resources against harmful effects of pollution, fire, civil and armed conflicts, displaced people and other externally derived impacts.*

Rationale: This is often difficult to achieve as loss of biological diversity to these effects is largely as a result of unplanned incidents which are unrelated to the use of biological diversity. Contingency planning to protect biological diversity within management areas from such incidents should be made and such planning will invariably be area specific.

Guidance:

- As a general observation, these effects derive from outside of the management area and are generally the cause of people's activities.

20 *Sustainability of uses of biological diversity will be enhanced if a long-term process of education and public awareness is implemented.*

Rationale: Many people are unaware of the connectivity between different parts of biological diversity and, in seeking to maximise their benefits from that diversity, may not realise the ultimate effects of their actions. It is necessary to engage people in education and awareness of the long-term benefits of the conservation of biological diversity in order for them then to strive for sustainability of any use of that biological diversity.

Guidance:

- In planning such education and public awareness activities the following topics are considered particularly important: management, value of sustainable use, changing consumptive patterns, value of biodiversity in the lives of people.

- Investments in education are needed to bring about changes in behaviour and lifestyles, and to prepare societies for the changes needed for sustainability.

- A long-term process of public education is needed to bring about changes in behaviour and lifestyles, and to prepare societies for the changes needed for sustainability. Particular emphasis should be given to such education in children.

Suggestions for the implementation of practical principles and guidelines

The workshop of experts, based on an open discussion session, provisionally identified a number of measures and actions that are believed to enhance the sustainability of the use of components of biodiversity. As the text was developed late in the meeting, the experts recommend that it be forwarded to the workshop scheduled in Ecuador for consideration.

Policy actions:

In considering policy there is need to:

- Develop the political will to bring changes about that foster the sustainable use of the components of biological diversity.

- Adopt guiding principles for sustainable use of the components of biological diversity into the national policies.

- Create the enabling environment called for at all necessary levels of government and bureaucracy.

- Acknowledge the fact that much illegal trade and illegal harvesting takes place.

- Recognize that market forces are not always sufficient to improve living conditions or increase sustainability in the use of components of biological diversity.

Socio-economic conditions:

In relation to socio-economic conditions there is need to consider:

- Needs for poverty alleviation in areas near or around the management area.

- Development of alternatives for the (non-sustainable) use of a biological resource for other livelihoods.

Administrative procedures:

Administrative procedures need:

- To implement good management plans (do not just leave them in an office).
- For clarity of management responsibilities.
- For clarity around issues of tenure and ownership.

Law and law-enforcement:

In regards to national laws and law-enforcement there is need to:

- Review existing legislation and regulations.

- Not assume that all illegal use is necessarily unsustainable.

- Consider legalizing uses, where illegal and/or uncontrolled use is sustainable.

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

- Set legal standards for use compatible with local socio-economic conditions.

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

- Keep enabling legislation and associated procedures for legal uses as simple, transparent, and accessible as possible.

- Stop and prevent illegal uses of components of biological diversity.

- Stop and prevent illegal trade in the components of biological diversity.

- Ensure that the penalties for unsustainable, illegal uses should exceed the potential profit of the use.

Best practices:

To promote best practices there is need to:

- Improve efficiencies in the use of the components of biological diversity.

- Recognize that unrealistically high standards frustrate and undermine adoption of practices that will promote sustainability; better to set realistic standards that positively reinforce wise practices and promote capacity development.

- Appreciate that small steps in improving management may result in greater improvements in sustainability of biological diversity uses.

- Improve the monitoring and assessment of the stocks, yields, and uses of the components of biological diversity.

- Ensure acquisition and communication of timely and reliable information on resource management.

- Use sound science in combination with local and indigenous knowledge in developing and implementing sustainable use activities.

- Integrate scholarship on use of timber and non-timber resources in the forestry education curricula.

- Improve education at all levels around issues of the sustainable use of components of biological diversity.

- Take whatever measures appropriate to capture as much added value from the use of biological diversity as possible.

Overall:

In general, there is need to:

- Adopt and apply the principles for the sustainable use of the components of biological diversity.

- Audit and review national policies on land use, trade and development to determine impacts on sustainable use of biological diversity.