UNEP

CBD

CONVENTION ON
BIOLOGICAL DIVERSITY

Distr.
GENERAL

UNEP/CBD/COP/3/24
20 September 1996

ORIGINAL: ENGLISH

CONFERENCE OF THE PARTIES TO THE
CONVENTION ON BIOLOGICAL DIVERSITY
Third meeting
Buenos Aires, Argentina
4 to 15 November 1996
Item 15.1 of the provisional agenda

SHARING OF EXPERIENCES ON INCENTIVE MEASURES FOR CONSERVATION AND SUSTAINABLE USE

Note by the Executive Secretary

1. INTRODUCTION

1. The medium-term programme of work of the Conference of the Parties (COP) provides for the third meeting "to consider the compilation of information and experiences shared on implementation of Article 11" (decision II/18, Annex, paragraph 6.8.1). Article 11 (Incentive Measures) specifies that the Parties shall "adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity".

2. The adoption by the Parties of effective incentive measures is of central importance to each of the three-fold objectives of the Convention: "The conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits." Incentive measures may be especially relevant in light of the global trend toward liberalisation and the growing role of the private sector in many countries.

3. At the first and second meetings of the COP, the issue of incentive measures arose indirectly under consideration of Articles 6 (General Measures for Conservation and Sustainable Use), 7(c) (Identification and Monitoring), 8(c) and (l) (*In-Situ* Conservation), and 10 (a), (b) and (e) (Sustainable Use of Components of Biological Diversity). Article 11 is also pertinent to Article 9 (*Ex-Situ* Conservation), Article 14 (Impact Assessment and Minimising Adverse Impacts), Article 20 (Financial Resources) and Article 21 (Financial Mechanisms). Thus, the implementation of the Convention will depend to a large degree on the effectiveness of the incentive measure-policies and programmes adopted by the Parties.

4. This note is intended to assist the COP by providing a synthesis of shared experiences gathered from case studies on incentive measures. The note offers a framework for incorporating the wide range of relevant socio-cultural, economic and legal factors into the design and implementation of incentive measures. The note also provides a taxonomy of incentive measures.

5. This note will focus on the incentives that operate primarily at the national and local levels. International incentives for the sustainable management of biological diversity will not be covered in detail in this note as the report of the Global Environmental Facility (UNEP/CBD/COP/3/5) and the report of the Executive Secretary on financial resources and mechanisms (UNEP/CBD/COP/3/6) provide further information on these.

6 The second meeting of the SBSTTA emphasised the importance of the obligation of the Parties under Article 11 to implement incentive measures that are economically and socially sound. This point was made in recommendation II/9 on the economic valuation of biodiversity, which encouraged the development of incentive measures that considered local level, participatory and capacity building issues. The SBSTTA recommended that the implementation of incentive measures not wait for further studies on the economic valuation of biodiversity.

2. BACKGROUND AND STATUS

7. Incentives are the opportunities and constraints that influence the behaviour of individuals and organisations in a society. Incentives for biodiversity management are derived from a complex interaction of a society's laws, policies, property rights, social conventions, cultural norms, and levels of compliance.[1] The decisions of individuals and organisations with regard to biological diversity and its components are the outcome of the multi-faceted and unique environment of each society. Incentives derive from a wide range of societal factors, not from any single measure.

8. An incentive *measure* is a specific inducement designed and implemented to influence government bodies, business, non-governmental organisations, or local people to conserve biological diversity or to use its components in a sustainable manner. Incentive measures usually take the form of a new policy, law, or economic or social programme. However, a single incentive measure functions within the broader set of incentives governing human behaviour, and its effectiveness depends upon support from the existing social and economic environment.

9. Consider the following example: A government wishes to encourage farmers to plant trees on their land, to protect water resources and reduce the pressure of fuel wood collection in state forests. The government introduces the *measure* of providing free seedlings to farmers, but farmers do not make the effort to plant and raise the new trees on their land. Why? To begin raising the trees, farmers may need an extension of agro-forestry expertise, the expectation of a market for the sale of their future fuel wood production, and credit or other inputs, such as water. In this example, the incentive measure failed because it did not have broader social and economic support.

10. The implementation of effective incentive measures for the sustainable management of biological diversity and its components is increasingly recognised as an important priority area for countries. In the past year, a series of conferences has specifically focused on the use of economics and incentive measures for biodiversity management. *Table 1 lists case studies originating from some of these efforts, which have provided much of the source material for this report*[2]. From these shared experiences, several clear lessons have emerged, including:

(a) **The successful design and implementation of incentive measures require consideratio of socio-cultural factors.** While economic factors are highly significant, they are not the onl determinants of biodiversity management outcomes. Factors such as a countr social practices, cultural characteristics, and history of resource management, as reflected in its laws and policies, are acknowledged as playing an equally important role in determining outcomes.

(b) **Opportunities to implement incentive measures are country-specific**. Each country has a unique institutional environment which defines the opportunities for and constraints on polic measures. Thus, general measures to improve incentives for biodiversity management cannot be prescribed.

(c) **The involvement of the private sector is facilitated by a participatory approac** . The private sector becomes increasingly involved in, andpositive about, conservation and sustainable use when their concerns are taken seriously and incorporated into policy.

11. The growing recognition that incentives for biodiversity management involve more than economic measures has given rise to the need for a practical framework to incorporate the range of relevant non-economic factors into the analysis of policy options. In the absence of a framework for including all of the relevant social, legal and economic factors, a consistent terminology and set of concepts for the analysis of case studies has not emerged. As a result, policy prescriptions have often been *ad hoc* and unsuited to the needs of individual countries.

12. This note attempts to fill this gap by offering an "institutional approach" to incentives for biodiversity management. The approach provides a consistent framework and terminology which will assist countries in the design and implementation of socially and economically sound measures, and will facilitate the exchange of information and experiences. As will be elaborated in Section 3, the institutional approach is a practical framework for incorporating the wide range of relevant factors, as cited in the case studies, into the design and implementation of incentive measures for biodiversit management.

13. Drawing on shared experiences, the institutional approach shows that successful incentives for conservation and sustainable use actually stem from a combination of measures incorporating economic, social and legal factors. Improving biodiv ersity management involves successfully changing patterns of human behaviour, with regard to the natural environment, through altering the relevant incentives. To effect change, multiple factors must be considered when designing and implementing new incentive measures, requiring the implementing agency to take concerted action on the legal, social, and enforcement fronts simultaneously.

14. This note uses an institutional framework to:

(a) **Analyse and draw lessons from shared experience with the design and implementation of incentive measures**. A series of case studies is reviewed with reference to the framework;

(b) **Outline options for action on incentive measures**. The note presents a taxonomy of measures based on the shared experiences from a wide range of countries; and

(c) **Develop a consistent terminology and set of concepts**. The analysis of further case studies, and exchange of information on shared experience, will be facilitated by consistency in definitions and conceptual framework.

15. The next section outlines the institutional framework for incorporating legal, economic, social and compliance factors into the design and implementation of incentive measures. Section 4 discusses several of the case studies from Table 1 in greater detail, showing the relevance of the institutional approach to incentive measures. Section 5 sets out a taxonomy of opportunities to improve incentive measures, based on the lessons learned from the case studies. Section 6 comprises recommendations to the COP.

3. INSTITUTIONAL FRAMEWORK

3.1 Overview of the Framewor

16. The incentives governing the use of biological diversity and its components are produced by a society institutional environment (Presber-James 1996). The institutional environment is comprised of three interactive components: (a) formal constraints; (b) social constraints; and (c) the levels of compliance (North 1990)[3]. These three components interact to produce: (d) a set of institutional incentives that govern human behaviour and, consequently, are responsib le for biodiversit management outcomes. Thus, to change outcomes requires altering the incentives through a process known as: (e) institutional change. The five dimensions will be discussed in turn.

17. In this note, the term institutions refers to the "ules of the game", and individuals and

organisations are the players. Institutions are the constraints, restrictive or enabling, that guide human behaviour in social and economic exchange. Individuals and organisations, such as community groups, national environmental ministries or development banks, are examples of players, and are not institutions themselves.

18. An incentive measure represents a change in the rules governing the use of biological diversit or its components. The most common incentive measures involve changes to formal constraints, such as property rights arrangements, economic policy or laws. Yet changes to incentives can be produced by altering social constraints, or by monitoring and ensuring compliance with the rules. Experience has shown, however, that successful changes in incentives require that existing formal as well as social constraints be supportive of the new measures.

3.2 Formal Constraints

19. *Formal constraints are the written instruments that provide a legally enforceable framework for the economic and social activities of a society*. These constraints can be divided into laws, government policies (including economic measures) and property rights. Examples of formal constraints relevant to biological diversity management are listed in Table 2.

20. The legal structure is the core of a countr formal institutional structure. Laws can either grow out of a countr social conventions or be imported from another institutional environment. Laws pertaining to biodiversity resources exist at many levels, and can include national parks acts, hunting regulations and zoning requirements.

21. Economic measures contained in government policy on biological diversity and natural resources are also formal institutions, as they function within the legal structure. Property rights, to the extent that they are written instruments and legally enforceable, are also important formal institutions[4]. Experience has shown that the distribution of property rights over biodiversity and the base resources of water and land is an important constraint for the effectiveness of incentive measures.

3.3 Social Constraints

22. *Social constraints are the unwritten rules that govern everyday human behaviour in economic and social exchange*. Cultural norms, social conventions, mores, etiquette, traditions, and taboos are all social constraints which stem from belief systems. Compliance with social constraints is by convention and not through legal channels. The purpose of social constraints is to reduce uncertainty for people b making human behaviour more predictable. Examples of relevant social constraints for biodiversit management are shown in Table 2.

23. While every country has its formal structure of laws, government policies and property rights, social constraints form an equally important parallel system of rules based on cultural norms and social conventions. Social constraints are determined by the accumulation of social convention, and thus can be more durable than formal constraints. Where formal constraints, such as laws and property rights, are weak, social conventions tend to prevail, and this is often the case with regard to biodiversit resources.

24. Because social constraints stem from belief systems, they tend to differ considerably fro society to society. Social constraints can be changed to improve incentives for conservation and sustainable use through a capacit -building programme, for example. However, the process of change is more gradual and requires greater sensitivity than for changes to the formal constraints.

3.4 Compliance

25. *Compliance is the degree to which individuals and organisations respect and adhere to the existing constraints, both formal and social.* The extent to which the individuals and organisations in a society comply with the formal and social constraints is determined by their relative levels of enforcement. Each type of constraint, formal and social, has a separate monitoring and compliance mechanism.

26. Monitoring and ensuring compliance with formal constraints is the responsibility of a third party, i.e., the state, normally through law enforcement agencies and the judiciary. This function often serves to coordinate access to and use of biodiversity and its components. Relevant organisations for monitoring and ensuring compliance with formal constraints may include, *inter alia*, the government departments responsible for protected areas, forestry and fisheries, as well as the judicial system.

27. Monitoring and ensuring compliance with social constraints is the function of a social group, which may be civil society as whole, a village council or a family unit. Methods for encouraging social compliance can range from a mild rebuff to outright ostracism, which normally act as strong motivation for conformity. In addition, individuals can self-monitor; in other words, people may regulate their own behaviour in accordance with their inner beliefs about acceptable standards of conduct.

28. Compliance is an important dimension of the institutional environment because without the enforcement of incentive measures, there may be no compliance; without compliance, measures are ineffective. Increasing the level of compliance with either the formal constraints or the social constraints can act as an incentive for biodiversit conservation and sustainable use. Most opportunities for improving the level of compliance relate to the enforcement of formal constraints.

3.5 Institutional Incentives

29. The three components of the institutional environment interact to produce a set of institutional" incentives. *Institutional incentives govern human behaviour and thereby determine biodiversity management outcomes; what distinguishes institutional incentives from the economic incentives normally discussed is that they are the product of a complex interaction between the full range of relevant factors rather than just a single factor.* A biodiversity management law and well-defined property rights over resources may be necessary, but not sufficient, conditions for creating incentives for conservation and sustainable use. What is also needed is compliance with the formal constraints, enabled by supportive social constraints.

30. The example of a government-sponsored tree-planting scheme in paragraph 9 provides an illustration of how the institutional environment creates incentives. The success of the economic measure of providing free tree seedlings depends upon broader institutional support. Since raising trees to produce fuelwood constitutes a long-term investment, the incentive measures have to be sustainable over a long time period. This may require government measures to improve the security of land tenure

and ownership of the trees, the gradual ending of open-access exploitation of state forests, and the implementation of a market for fuel wood or timber. At the same time, the planters need the extension of agro-forestry techniques and the availability of other technical inputs in order to successfully raise timber over a long growing cycle. Educating the target groups on the role of forests in ecosystem health and the provision of water supply could reinforce the commercial incentives.

31. In this example, the government "institutionalises" the incentives for the conservation and sustainable use of biological diversity through measures taken at each level of the institutional environment. While the distribution of free tree seedlings may be the economic focal point of the programme, the government provides support and reinforcement at the formal, social and compliance levels. The strengthening of land tenure and the establishment of markets are formal measures. Social-level measures include general capacity-building programmes such as the extension of technology and environmental education. At the level of compliance, the government begins to control the open-access exploitation of state forests, and guarantees the property rights or tenure agreements of the individuals and communities involved in tree planting. When all of the measures work together, people's beliefs about their opportunities change. The incentive to plant trees is institutionalised when people believe that they can obtain economic and environmental values from the activity.

3.6 Institutional Change

32. *Institutional change involves altering the institutional environment of a country, frequently through the introduction of an incentive measure.* A new incentive measure can represent a change in a law, policy, property rights regime, social convention, or the level of monitoring or enforcement. While an incentive measure usually involves an adjustment in one of these areas, the entire institutional context must be supportive for implementation to be wholly successful.

33. Institutional change is usually gradual and incremental because the institutional environment functions to provide stability to society. In addition, the institutional environment creates vested interests, individuals and organisations that function successfully within the existing set of societal rules. Thus, institutional change that modifies the incentives governing biological diversity use will require the cooperation and participation of the relevant stakeholders and realistic expectations about the time required to effect change.

3.7 Summary

34. Incentives are the product of more than just one factor or measure. Incentives are the product of the interaction among the formal constraints, the social conventions, and the level of compliance in society, which together create the institutional environment. The design and implementation of new incentive measures require an understanding of the institutional environment which guides the decisions of individuals and organisations whose behaviour, in effect, determines a country's biodiversity management outcomes. But institutional change is gradual and new measures depend upon support from each component of the institutional environment. Examples of successful institutional change will be discussed in the following section on shared experiences.

4. SHARED EXPERIENCES

35. The six case studies presented in this section illustrate that the successful design and implementation of incentive measures depend upon wider institutional support. The cases demonstrate the applicability of the approach in different geographical regions, and in countries at various stages of econ mic development. The cases come from Costa Rica/Panama, Nepal, Tanzania, Brazil, Cameroon and the United States. Again, these examples are only six of the numerous innovative programmes taking place around the world, and the following discussion is in no way intended to diminish the value of other initiatives.

4.1 Case Study #1: The involvement of local communities in the development and implementatio of incentive measures in La Amistad Biosphere Reserve, Central America (Lacher et al. 1996)

36. La Amistad Biosphere Reserve is the largest functioning bi-national conservation complex in Latin America. It covers over one million hectares in densely populated Costa Rica and Panama. The Amisconde project is a collaborative effort by local communities, NGOs, and the private sector to respond to the loss of biodiversity in the buffer zone of the Reserve.

37. The Amisconde project promotes sustainable development and conservation within the Reserve buffer zone through an integrated approach involving education, training, access to credit, subsidies for reforestation, and cost-sharing for local infrastructure building. By working on several fronts simultaneously, the project mobilises local efforts to restore degraded and deforested areas.

38. Deforestation in the project area has largely been reversed. The Amisconde project found that keys to success included a ommunity immersion process" prior to project implementation, participation of organised community groups in the preparation of the master plan and annual operative plan, and the maintenance of enough flexibility in the project plan to modify incentives as conditions change. The Amisconde project shows that the building of social support through education and participation is a prerequisite for the implementation of direct incentive measures involving funds for local conservation and development projects.

4.2. Case Study #2: Linking people to protected areas in Nepal: The Annapurna Conservatio Area Project (Gurung 1996)

39. Degradation of the local enviro nment and a decline in biodiversity in the Annapurna region of Nepal have often been attributed to the Forest Nationalization Act of 1957 and the rapid increase in tourists since the 1970s.

40. In response, Nepal established the Annapurna Conservation Area (ACA) in 1986. The ACA represented a departure from the traditional protected areas in Nepal. As a conservation area rather than a national park or wildlife reserve, the ACA recognises the rights of traditional resource users in the area. In addition, the ACA is managed by a Nepalese NGO, who runs the Annapurna Conservation Area Project (ACAP). This project is based on sustainability, people participation, and ami" or matchmaking between grassroots needs and national and international financial support. The project activities include forest conservation, alternative energy, conservation education, tourism management, community development projects, and research and training.

41. The human impact on the fragile Annapurna environment has lessened, and t he area has

experienced a marked reversal of the previous trend of degradation and loss. The most important lesson from the ACAP is that conservation success depends upon gaining the trust of the local people. With integrated incentive measures based on the principles outlined above, the local communities can now protect and sustainably use the components of biodiversity; and they monitor use activities and control the level of exploitation. In addition, the successful management of the area has attracted c onsiderable financial support for the associated communit -based conservation programme.

4.3 Case Study #3: The importance of formal enforcement in creating local incentives for sustainable management in Tanga, Tanzania (Gorman et al. 1996)

42. Some 250,000 people live in the Tanga region on the north-east coast of Tanzania. Most inhabitants are dependent upon some form of fishing for their livelihood. The region has experienced growing environmental problems, including the use of destructive fishing methods, increasing pollution and degradation of the mangrove forest. A major perceived problem among local stakeholders was the lack of enforcement for the existing laws and policies protecting natural resources. Local villagers thought that the government was not controlling resource exploitation, for example, by allowing illegal dynamite fishing. Most stakeholders wanted this practice stopped.

43. A programme to address the problem was initiated by the Tanga regional authorities, with assistance from the IUCN and Irish Aid. The programme encourages both local communities and the local government to improve natural resource management practices. It was recognised that a solution required an integrated approach, and that enforcement of the existing laws and policies was also necessary. Incentive measures included the granting of use rights, revenue sharing among stakeholders, and a participatory process in the design, implementation, monitoring and assessment phases of the project. Training programmes were introduced for both villagers and local government officials. Man of the new formal constraints were at the level of village b -laws. The Tanzanian government reviewed these laws to ensure that they were consistent with existing national level laws and polices, which created institutional harmony.

44. This example of an integrated institutional approach to incentives incorporating legal, social and compliance factors has proven effective. In the areas of the project, dynamite fishing has been almost completely eliminated. Two villages have replanted 100,000 mangroves; dune and beach areas have been replanted to prevent erosion; and cooperative enforcement arrangements have been set up between the marine police and villages.

4.4 Case Study # 4: A tax incentive for protected areas and water supply areas in Brazil (Loureiro 1996)

45. Some states in Brazil have large-scale land-use restrictions due to protected areas and water supply areas, and are at an economic disadvantage because of the constraint on developme nt. Furthermore, the federal government in Brazil redistributes the ICMS (value-added tax) to the country 26 states on the basis of value added generated. As a result, states with many protected areas receive lesser allocations from the federal government, despite the environmental benefits they provide.

46. In response, an Ecological ICMS has been introduced in four states, which provides extra fiscal compensation for protected areas and/or water supply sources. The initiative for the Ecological ICMS came from the Parana state, and its implementation involved participation by a range of organisations, including federal, state and municipal bodies and NGOs. Since 1992, an annual review has taken place

to improve the project so that it better meets its objectives.

47. The results of the measure include an increase in the number and size of protected areas, an increase in revenue for participating states, reinvestment of revenue into protected areas and the adoption of the Ecological ICMS by other states. This experience is an example of a successful change in formal constraints□axation polic □hich required cooperation between municipal, state and national government bodies.

4.5 Case Study #5: Community development programme for sustainable use in Cameroo (Lisinge 1996)

48. A survey of the communities living near the Injim Forest, Cameroon, revealed that 90% of respondents were concerned about environmental problems associated with forest degradation. The Injim Mountain Forest Project (IMFP) was then initiated by Birdlife International, with funding fro WWF, in conjunction with government, other NGOs and local communities. The objectives of the IMFP are to secure the populations of two endangered species and to promote sustainable management of the forest through the introduction of alternative economic activities and education and training programmes.

49. There are three components of the IMFP: community forest management, sustainable livelihood, and ecological monitoring. Local communities were encouraged to participate in each stage of the project□ development, as were relevant NGOs and government ministries. For example, the boundary of the forest was demarcated with input from both traditional authorities and representatives from the national government. A network of forest patrollers was selected from current forest users who monitor and report any infringements to the forest authorities.

50. The use of a range of measures, including the involvement of all stakeholders, the use of economic incentives, partnership building, and training people in new methods for sustainable use, served to reverse the trend of forest degradation and biodiversity loss. Project organisers feel that the continued success of the IMFP depends on a supportive legislative, economic policy and a propert rights framework at the national level.

4.6. Case Study #6: Incentives to enhance conservation of endangered species on private land i the United States (Costa and Kennedy 1996)

51. The Red Cockaded Woodpecker is an endangered species in the United States. The bird is restricted to a particular type of long-leaf pine forest which has contracted to a few patches in the southern states. The disappearance of the preferred habitat for the bird has resulted in a decline in population and its listing under the US Endangered Species Act.

52. Private landowners have been interested in providing more habitat for the species, but have been deterred from doing so by their responsibilities under the Endangered Species Act. If landowners improve the habitat for the bird and its numbers increase as a result, the landowner incurs the legal

obligation to maintain the population of the bird at the higher level. As a result, landowners have been reluctant to improve habitat for the bird and its numbers have remained low, despite considerable conservation sentiment.

53. The US Fish and Wildlife Service, working with private landowners and listening to their concerns, created a "safe harbour" exemption for owners who voluntarily created habitat for the species. Under the safe harbour rule, landowners would not increase their legal responsibility for an new birds on their land as a result of habitat improvements.

54. The result has been a significant rise in the number of breeding pairs of the bird as more and more landowners apply for the safe harbour provision. A major component of the progra success is the cooperation of government agencies with the private sector, which was facilitated when the landowners concerns were incorporated into the easures. Although the United States is not a Party to the Convention, its experience with involving the private sector in conservation and sustainable use provides useful information for those wishing to increase private-sector participation.

5. OPPORTUNITIES TO IMPROVE INCENTIVES

55. *This section presents a taxonomy of incentive measures to assist countries in achieving their biodiversity management goals.* In keeping with the framework outlined in Section 3, the taxonomy is based on measures at the (a) formal, (b) social and (c) compliance levels. It is stressed, however, that successful implementation of a single incentive measures requires support from the broader institutional environment.

56. Table 4 contains a taxonomy of enabling incentives that could contribute to the sustainable management of a countr biological diversity. The table shows that the most common opportunities for improvement involve changing the formal constraints. This reflects the fact that formal policies, laws and property rights are most easily identified. However, the social constraints and compliance issues are at least as important, though more difficult to specify. Opportunities to improve incentives in each area of the institutional environment are discussed in turn.

5.1 Formal Constraints

57. Formal constraints are the legally enforceable written rules that govern economic and social exchange. Economists have developed two distinct approaches to incentive measures, and both pertain to the formal dimension of the institutional environment. One involves property rights and markets and the other involves policy. For example, changes to the formal constraints can involve the implementation of markets for the benefits of biodiversity, or the regulation of the processes and activities that undermine sustainable use. These strategies can be referred to as market solutions and policy solutions. The following discusses the applicability of each.

5.1.1 Market Solutions

58. Market solutions are pertinent where markets are missing for the benefits of biodiversity or for the costs of biodiversity loss. Market solutions require the assignment of well-defined property rights over the biodiversity resources in question. The assignment of property rights over the values of biodiversity internalises the social (or "xternal") benefits of investment in conservation and sustainable use. Property rights create incentives by allowing individuals and organisations to better capture the

value of their biodiversity investments.

59. In practice, the establishment of property rights and markets for the benefits of biological diversity is difficult because many of the values, particularly the enormous categories of ecosyste function and resilience (Perrings et al. 1995) and existence value (Krutilla 1967), are either unquantifiable or intangible. However, many examples exist where some components of biodiversit can be captured with a property right and traded. These solutions are based on the creation of innovative new markets, and some examples are listed in Table 4.

60. Examples of innovative property rights and market-based solutions include tradable water shares (Australia, New Zealand, India), tradable reforestation credits (Costa Rica), tradable conservation credits (Mexico, Costa Rica) and eco-labelling (Germany, Korea, Peru Costa Rica) (Panayotou 1996).

5.1.2 Policy Solutions

61. Policy solutions typically entail taxes and subsidies applied by the government[5]. Policy solutions can create incentives for biodiversity management by making sustainable use alternatives financiall more attractive through supportive policy. Likewise, taxes can be levied against activities that have negative external effects on biological diversity. Either alternative uses government policy to level the playing field for sustainable biodiversity management when the functioning of existing markets has negative external effects.

62. Experience with taxes and subsidies as incentives for conservation and sustainable use include differential land use taxes (Germany), watershed charges (Indonesia, Brazil), deforestation charges (Central African Republic), differential park entrance fees (Kenya, Botswana), scientific tourism fees (Madagascar), among many others (Panayotou 1996).

63. The correction of perverse incentives is another opportunity for a policy solution. Perverse incentives are the result of policies that subsidise activities that prevent sustainable management of biological diversity or, less commonly, tax activities that benefit biological diversity. Governments can look to their range of natural resource policies for opportunities to remove incentives for destructive activities.

64. A country legal framework is an equally important area for improvements to formal constraints. Opportunities can be found at all levels, from local b -laws to the national constitution, and can include a review and harmonisation of the relevant legislation. Many developed countries in particular have had success in legal changes such as conservation easements.

5.2 Social Constraints

65. Social constraints are the unwritten social conventions and norms that guide the behaviour of individuals and organisations in their everyday activities. There are many potential opportunities for changing social constraints to create enabling incentives for biodiversity management. Circumstances will vary by country, but the following examples provide illustrations of some common opportunities. In

many instances, opportunities for improvement are available in more than one area. Table 4 contains a taxonomy of possible measures to create social constraints that favour conservation and sustainable use, a few of which are described below.

66. In some instances, a lack of information or understanding prevents the conservation of biodiversity and the sustainable use of its components . A lack of information regarding what is necessary for conservation and sustainable use, and an absence of understanding about the benefits that biodiversity provides, can affect the behaviour of individuals and organisations at man y levels. In such circumstances, education programmes and awareness campaigns at the appropriate levels can help to change people belief systems regarding biodiversity and thereby create more enabling social incentives for conservation and sustainable use.

67. In the past, many individuals and organisations have been excluded from the decision-making process regarding biodiversity management, particularly conservation; the establishment of protected areas is a commonly cited example. Feeling excluded can lead to social rejection of formal conservation measures, and changing such hostile social constraints can be difficult, as it requires altering people beliefs. Experience has shown that one method for improvement is to develop participatory activities for those who feel alienated. Measures such as including local people in decision-making processes and offering a feedback mechanism for any potential disputes can lead to new preferences for biodiversity management. Such decentralised decision-making processes can encourage participation by a range of potential partners for biodiversity management, including the private sector, NGOs, landowners, local communities, scientific bodies and universities.

68. Conservation and sustainable use may also be compromised by a feeling of uncertainty, particularly for individuals and communities who are poor. If people feel uncertain, they are likely to have preferences and social conventions that prioritise short-term gain over long-term planning (a high discount rate). Such preferences can profoundly undermine conservation and sustainable use, contributing to a cycle of poverty. While the most fundamental way to address this issue is to alleviate poverty, a more immediate possibility for improvement is to instigate training and capacit -building programmes. These offer especially good opportunities where traditional resource management schemes have been eroded. Training people in sustainable use methods and building capacity in biodiversity management creates more stakeholders in favour of conservation and sustainable use. Also, the allocation of property rights over local resources to the users can reduce uncertainty and provide an incentive for adopting long-term management objectives.

69. In some cases, traditional property rights regimes, traditional management regimes, indigenous knowledge, and cultural norms for conservation and sustainable use exist, but receive little recognition or support from government. This can lead to an erosion, over time, of these enabling social constraints, particularly if property rights are legally transferred away from individuals and communities. Often, the result is a shift in social constraints away from favouring conservation and sustainable use. Where social constraints do favour conservation and sustainable use, there is an opportunity for policy to build on existing institutions. Positive reinforcement for conservation and sustainable use can be provided by conferring awards and prizes which underline the value of sound management through traditional or innovative methods. Emphasising the positive and rewarding creativity and innovation can engender and reinforce enabling social constraints.

5.3 Compliance

70. Compliance refers to the extent to which individuals and organisation respect and adhere to the formal and social constraints that apply to their behaviour. Opportunities to improve levels of compliance are found mostly in the area of formal compliance, rather than social compliance. This is because a change in social constraints normally brings about a corresponding shift in social compliance mechanisms. The taxonomy in Table 4 lists a few aspects of compliance that offer opportunities for change. The following examples describe some common circumstances which can offer opportunities for improving the effectiveness of incentive measures through increasing levels of compliance.

71. Formal compliance can be impeded by political interference in the judiciary. The judiciary is intended to approximate an independent third party which makes decisions based on its interpretation of the law. If the judiciary is not ensuring compliance in the courts, the reason is often political interference. Such interference can originate from vested economic or political interests. In the case of biological diversity, these interests may lie in the natural resource sector of the economy. Freeing the judicial system of political interference is a challenging but significant opportunity to increase the effectiveness of the formal constraints for biodiversity management. Normally, this involves altering the social constraints that permit interference, and should be regarded as a long-term project.

72. Often, the formal constraints for biodiversity management are comprehensive, but there is no corresponding compliance by society. In these cases, the relevant social constraints may be in conflict with the pertinent formal constraints (or are otherwise not supportive). Such conflict can be the consequence of formal constraints such as conservation laws being adopted from foreign institutional environments and placed in an institutional context where there is little or no social support. In this instance, harmonising the two sets of constraints can improve outcomes.

73. Education and capacit -building within the relevant enforcement agencies can improve compliance and the level of harmony between the formal and social constraints. Education of enforcement agencies may involve sensitivity training, if monitoring and ensuring compliance involves direct interaction with the public. A sense of pride on the part of enforcement agencies, and an improved relationship between these agencies and the public, can engender a new level of commitment and can lead to a shift in beliefs about the positive role that enforcement can play in a society.

5.4 Summary

74. Sustainable improvements in biodiversity management practices stem from formal constraints that create enabling incentives, supported by social constraints and appropriate monitoring and enforcement mechanisms. When the three factors of an institutional environment begin working together to promote sustainable biodiversity management, the cost to government of achieving its biodiversity objectives is reduced.

75. The diagnosis of opportunities for designing and implementing economically and socially sound incentive measures involves an assessment of a countr entire institutional environment, due to the interactive nature of the three components. Once an institutional diagnosis has identified areas of opportunity to improve incentives, then appropriate measures can be designed. However, a specific measure new property right, or community participation in resource management eeds support fro the overall institutional environment for sustainability and long-term success. Furthermore, the unique socio-cultural, economic and legal environment that has evolved in each country must inform polic

decisions about the conservation and sustainable use of the components of biodiversity.

6. RECOMMENDATIONS FOR ACTION BY THE COP

76. The COP may wish to recommend that the Parties:

(a) consider adopting an institutional approach to assist them in designing and implementing economically and socially sound incentive measures which are appropriate to their individual circumstances;

(b) when adopting such an approach, undertake a review of the existing institutional incentives governing biological diversity management, through an assessment of their institutional environment;

(c) develop biodiversity impact assessments, incorporating incentives within the institutional approach. Impact assessments could be recognised as a step in the design and implementation of incentive measures;

(d) share information and case studies on the design and implementation of incentive measures. The adoption of an institutional framework for the analysis of incentive measures could improve the quality and usefulness of the information shared among countries b providing a common framework and terminology. The information collection and sharing could be c -ordinated by the Secretariat in association with other international organisations and research bodies; and

(e) develop domestic capacity for the use of economics and incentive measures as tools for biological diversity management.

77. The COP may wish to consider making incentive measures a standing item on the agenda. A theme, such as international incentives or perverse incentives, could be chosen as a focus for the next meeting.

Notes

[1] A distinction is often drawn between incentive measures that enable a country to meet its biodiversit management goals and those which impede ouch progress. In this note, enabling incentives are those which allow a country to meet the threefold objectives of Article 1. Perverse incentives are those which impede the Parties' ability to meet the objectives.

[2] Table 1 lists only a sample of case studies from recent efforts and is in no way complete.

[3] The institutional approach to biodiversity management is based on the theory of Douglass North (1990). North refers to legal constraints as "ormal institutions", social constraints as "nformal institutions", and monitoring and ensuring compliance as "nforcement". Other recent studies on biodiversity loss make reference to some of the main concepts (e.g., Barbier et al.. 1994; Hanna and Munasinghe 1995a and 1995b; Wells 1996).

[4] Here, property rights are defined broadly to mean the control of a benefit stream of any kind (Bromle 1992). An asset does not have to be tangible, like land or financial capital, to be captured by a propert right; property rights exist over many types of intangible assets. This broad concept of property rights is particularly applicable to biodiversity resources, as many of the benefits are intangible, such as information.

[5] The policy objective is to adjust the functioning of markets to approximate the outcomes that would obtain under full internalisation of social costs and benefits (Pigou 1920).