

**Background Material/Case Studies**  
**on Incentive Measures**  
**for Promoting Conservation and Sustainable Use of Biological Diversity**

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## **Executive Summary**

Pakistan is a party to the Convention on Biological Diversity (CBD). Third meeting of the Conference of the Parties adopted decision III/18 on incentive measures which requires the parties to review their present economic policies to identify and promote incentives for the conservation and sustainable use of biodiversity. Pursuant to this decision, CBD Secretariat needs background material from the country parties on use of incentive measures and case studies on conservation and sustainable use of biological diversity. Relevant organizations in the country were requested to provide material in this respect and this paper has been developed on the basis of the information provided by them.

There are a number of factors that provide or influence economic incentives. These include the right market prices, secure property rights, poverty inequality and uncertainty. With uncertain future and inequitable access to resources, poverty can lead to unsustainable resource utilization. The development strategies that aim at improving social life and promoting equitable access to resources have better chance of success. Provision of additional income sources to the communities through sustainable use of natural resources is a powerful tool in the conservation of biodiversity.

Improvement of health and sanitation services, rural electrification, distribution of gas cylinders/stoves for cooking purpose as an alternate energy source, improvement of livestock through new breeds and forage development, development of horticulture, apiculture, trout fish farming, sericulture, cultivation of medicinal plants and promotion of ecotourism would be good incentive measures for promoting conservation and sustainable use of biological diversity.

The resource conservation projects developed on these lines have demonstrated that by providing incentive measures to the local communities, the conservation and sustainable use of biodiversity becomes easier through reducing pressure on biological resources and diverting attention and creating interest of the people towards natural resource conservation.

## **1. Introduction**

Pakistan is featured by great geographic and biological diversity. It includes the World's highest mountain ranges, sub-mountainous country, vast alluvial plains, deserts and coastal areas. These ecological conditions naturally abode a great variety of life forms both of local as well as world wide importance.

The rich species and genetic diversity in Pakistan is characterized by the presence of 5,700 species of plants with 372 as endemic, 188 species of mammals representing 10 orders, against 4,100 species and 18 orders for the entire world. Endemic mammals are Indus dolphin, Chiltan markhor and Suleman markhor. Number of bird species in the whole world is 8,600 and 666 of these are found in Pakistan. The number of reptiles mostly snakes and lizards is 176 against a total of 6,500 for whole of the world. 525 species of amphibians/fish found in rivers, lakes and sea are indigenous to Pakistan (400 marine and 125 freshwater), while the number of insects/invertebrates is about 20,000.

Biological diversity in Pakistan provides goods and services to a large number of people and their livestock. For the perpetuation of these products and services to the greater benefits of the public as well as preservation of natural ecosystems and biodiversity, it is imperative that these resources are managed on sustained basis.

The problems in the sustained management of natural resources and biodiversity in Pakistan are all man oriented. About 72% of the total population live in rural areas, in or around the natural resources, therefore, their dependence on the natural vegetational resources and biodiversity is very high. The natural forest resources and biological diversity are under very heavy use which is feared to result into their forest degradation over a couple of decades.

The strategy for the conservation and sustained management of biological diversity in Pakistan is the identification of areas rich in biological diversity in different ecological zones, rehabilitation of degraded ecosystems, recovery of threatened species, protection of natural habitats and maintenance of viable population of degraded ecosystems.

The role of local communities in conserving biological diversity and importance of maintaining their knowledge and practices of relevance to the conservation and sustainable use of ecological resources is well recognized. Sustained management of biological diversity could best be justified and most likely to sustain if it provides benefits to the local people. The objective of sustained management of ecological resources and preservation of biological diversity is not to draw a line and separate the people and the resource but to device such a compromise between

the resource use and resource potential and to satisfy their traditional rights to gather products or graze livestock.

Third meeting of the Conference of the Parties adopted a decision on the implementation of Incentive Measures for sustainable development of biological diversity. Pursuant to this decision, CBD Secretariat requested country parties to provide background material on incentive measures for developing a paper on this issue by the CBD Secretariat. In this respect, relevant organizations in the country were requested to provide material. Based on the information provided by those organizations, the present paper has been developed for submission to the CBD Secretariat.

## **2. Incentive Measures to Promote Conservation and Sustainable Use of Biological Diversity in Pakistan**

Implementation of incentive measures is particularly useful in the conservation and sustainable use of natural biological resources/biodiversity. Since many of the actions that directly threaten the production potential and sustainability of biological resources/biodiversity are those not of government agencies but of the private sector and individuals. The actions of private people may be harmful to the resource such as a landowner cutting down an area of diverse forest. Or they may be beneficial such as a farmer maintaining a valuable, locally adapted land race of an important crop.

Indirect methods or incentive measures for the conservation and sustained use of natural biological resources could include concessions and provision of advice for and on the sustainable use of natural biological resources. For example, an agency persuades landowners to manage the land in a certain way. In return to this help the person, parties or community in solving problems arising due to stoppage or restricted use of natural biological resources/biodiversity or even help them in the development of other general public use infrastructures.

Provision of technical interventions to the local communities to enhance their income from their own sources would be a very useful incentive to get their cooperation and help for the conservation and sustainable use of biodiversity. It is recognized that different incentive measures designed for the communities living in and around biological resources areas are specific to the cultural and socio-economic conditions of Pakistan and these are in conformity with legal issues, political will and economic conditions of the general public.

Rangelands/pastures is a major land use in most of the areas in different ecological zones. Grazing pressure is very high as compared to carrying capacity of rangelands. Increase in forage production from range resources through grazing management, introduction of new livestock breeds and control of disease might be a good incentive for the people. Establishment of fuelwood and timber plantations on marginal lands will provide fuelwood, timber, forage for livestock and additional income for the poor farmers.

Horticulture development is an effective means to increase farmers income from the land. One of the incentives for the local peoples to cooperate in biodiversity conservation could be to provide them necessary guidance and improved varieties of horticulture crops. It will increase their income and reduce their dependence on biological resources. Provision of alternate source of energy would also be necessary to reduce pressure of forests. In mountain areas there is also scope of trout fish farming, sericulture, apiculture, cultivation of medicinal plants and ecotourism. Interventions could be provided to the local communities to promote and develop these activities for increasing their income and act as incentive for conservation and sustainable use of biological resources.

There are a number of other points which may be beneficial for promoting conservation and sustainable use of biological diversity through incentive measures. It is necessary to determine the major obstacles in the conservation process and specify how conservation of biological resources can be integrated with development. Research activities relating to habitat and its fauna and flora needs to be promoted. The organizations associated with the conservation of biological diversity may be strengthened with qualified manpower.

Local communities need to be involved in the design, implementation and review of conservation plans. Co-ordination between different agencies need to be strengthened and priorities for action at the national level be fixed. National Parks and special areas may be developed and facilities provided for the tourists supported by publicity and guided activities for public awareness and tourist attraction. Entry fees may be charged for visiting the National Parks. Guided tours of the National Parks and special Wildlife areas can be arranged and guides from the local community can be engaged and provided to visitors on payment. Similarly other user fees can also be charged like camp sites, car parks, etc.

It is not appropriate to put complete ban on trophy hunting or trapping of wildlife for sport and trade. This often has negative impact. In conservation terms, an absolute ban on animal hunting is often a misguided strategy because healthy population of wildlife produces a harvestable surplus. Furthermore, the number of animals taken legally are small fraction of those taken illegally and of course the presence of legal hunting parties can deter illegal hunting.

Therefore, sustainable utilization of wildlife may be allowed by regularizing trophy hunting. In this way considerable funds can be generated. Special taxes on trade in wildlife and wildlife products, both endemic and exotic, can be used as the conservation measures.

Industries may be asked to pay 1% of their annual income towards Biodiversity Conservation Fund. Voluntary contributions, from the philanthropists, public private bodies may be encouraged. The Government should agree that the funds would be tax free. The Funds, thus earned, would be used for management of the wildlife of the country and for adopting conservation measures as well as for various economic incentives directed towards improving co-operation with surrounding communities.

It is also made sure that these incentives should be economically viable, technically feasible and socially acceptable. Such incentives are provided in all natural resource conservation activities by the national and international conservation agencies.

### **3. Case Studies**

#### **3.1 Maintaining Biodiversity In Pakistan With Rural Community Development**

This project commenced in 1995 and was designed to comply with several of Pakistan's obligations under the Convention on Biological Diversity, principally under Article 8 (in situ conservation). The Ministry of Environment, Local Government and Rural Development is the executing agency and IUCN Pakistan is the implementing agency. At field level, implementation is carried out by IUCN- Pakistan in the Northern Areas of Pakistan while implementation is carried out in the North West Frontier Province (NWFP) by Forest and Wildlife Department of the Government of NWFP. This project is funded by the Global Environment Facility Pre-investment Fund established under Articles 21 and 39 of the Convention.

The approach of the project is to facilitate the protection and sustainable use of biological resources by the rural communities themselves and involving imparting technical skills, providing information and technical assistance and providing seed funding. The project relies on incentives for its effective implementation both through activities but, more importantly, in helping the communities structure their own village management plans as self-motivating. For example, incentives to preserve snow leopards may include the development of trophy hunting, eco-tourism or compensation schemes for farmers whose stocks have been adversely affected by snow leopards. A disincentive which has been built into one village management plan is the

sanction against a poacher of no-one in the community attending the marriage ceremony or funeral of the poacher.

The hypothesis of the Biodiversity Conservation project is that conservation is possible through community development, provided they have an economic incentive. The biggest economic incentive for local can come from organized trophy hunting of large mammals such as ibex and markhor. A quota of five ibex trophies has been approved by the Prime Minister for the areas where biodiversity conservation initiatives have been taken by the community. A fee of US\$ 3,000 for foreigners and Rs. 20,000 for Pakistani hunters has been fixed from which 75% will go to the communities and 25% to the government. A quota of six markhor trophies has also been approved by the CITES meeting for Pakistan. The permission for trophy hunting will be given to those communities who manage their biodiversity under a management plan and where authentic census of wild animals determines the availability for trophy hunting. The income from trophy hunting will be deposited in the common village conservation fund which will be used for further conservation activities through consensus.

Several plant species are presently being used in rural communities as medicines, spices and dyes. Their potential market value in foreign markets is lost to the communities and the country. Under the recently adopted Convention on Biological Diversity, the parties have recognized the importance of retaining this value in the countries of origin. The project will screen plant material that has potential international economic value and ensure that rights to use those resources are retained in Pakistan. The commercial benefits of these indigenous materials and processes will be demonstrated to villagers, as well.

Village Conservation Funds have also been established in the project areas to provide a sustainable source of income that can be used to pay for the cost of conservation activities. The initial investment consists of equal amounts deposited by Village Organizations and project funds. Further inputs will come from limited use of wild species (e.g. trophy hunting) and at least 50% of the annual interest will be used towards conservation activities.

During the first phase of the project a Biodiversity Trust Fund will be established. The intent of the Trust Fund will be to provide a sustainable basis for financing more traditional conservation of species and /or habitats, especially where high-profile species are severely depleted and/or the species do not have potential value for rural villages (e.g. protection of sea turtle nesting beaches). To ensure involvement of local communities, the Trust Fund will target its support to national NGOs who will work with CBOs to implement the conservation actions. The project has been successful in motivating the local communities for conservation and sustainable use of biological diversity through the implementation of incentive measures.

### **3.2 Sustainable Resource Use in Bar Valley**

Bar valley is situated in the Nagar Sub-division of the Gilgit district in the Northern Areas of Pakistan. It is connected to the Karakoram Highway through a jeepable road. The valley is characteristic of a high altitude, low rainfall and arid mountain ecosystem. The area offers a wide range of habitats for a variety of flora and fauna. The main tree species are Juniper, Willow, Ash and Birch. Himalayan ibex and snow leopard are among the important wildlife species.

By late 1980s the natural resources of Bar Valley were threatened because of population pressure, expansion of agriculture and livestock, habitat degradation and subsistence hunting of the ibex by the locals. The population of Siberian Ibex was nearing extinction while the Snow leopards were also being poisoned to protect domestic goats and sheep. WWF-P's Bar valley project was thus initiated to protect the natural resource of the area particularly the Himalayan ibex and snow leopard. The objectives of the project were as under:

- Conservation of natural resources, especially the wildlife population and their habitat.
- Sustainable use of wildlife species, especially the ibex for enhancing local economy, to create new sources of income generation e.g., promotion of eco-tourism and trophy hunting of ibex.
- Capacity building of local activities for community mobilization and management issues related to good record keeping and accounts management of CBOs.
- Awareness raising of the general public regarding environment and conservation.
- Capacity building of local guides to promote eco-friendly trekking and tourism.

Under this project following achievements were made:

- Conservation of Ibex for sustainable resource use.
- Replenishing of depleting habitats.
- Establishment of a Village Committee elected by the locals to:
  - a) Guard against illegal hunting of ibex and other wildlife species;
  - b) Undertake development activities as planned by the project.

### **3.3 Malakand/Dir Social Forestry Project (MSFP)**

MSFP, covering Malakand and Dir district, was started as a pilot phase in Malakand Agency in 1987-88. Since 1992-93, it is going through a second phase that will end in 1997. The objective of the project is to contribute to raise the standard of living in Malakand agency and Dir district, by improving the productivity and use of hillsides and marginal farm lands. Accordingly, the long term objectives of the project are to:

- Restore suitable vegetation to the denuded hillsides and marginal farmlands to create an ecologically and economically improved living environment on a sustainable basis;
- Further develop an extension approach for these field activities; and
- Stimulate institutionalization of this extension approach at local level and within the NWFP Forest Department.

MSFP has typically covered activities such as afforestation, range management, tree improvement, extension, women activities and training. A key component of project's approach is called Village Land Use Planning (VLUP), a step-by-step guide for preparing a resource management plan. VLUP produces a Village Action Plan that contains a complete perspective on land use and zoning as envisaged and agreed by the project and the people.

Most activities pursued by the project are forestry-driven. However, there is a dynamic interaction between forestry, livestock, range and pasture management. There is significant potential of high value cash and fruit crops in the region. Lack of attention to these factors not only obviates the project objective of income generation, but also fails to reduce pressure on forest resources as source of fuel, fibre, forage and cash.

The project experimented with public participation in resource management through the social forestry approach and has been quite successful in so far as eliciting interest and mobilizing people is concerned. Use of methodologies such as Village Land use Planning to arrive at products such as village Management Plans presents a conscious effort on part of implementing agency to involve people in decision making regarding resource use. The most successful impact of this project has been the recognition of the social forestry approach by the policy makers and implementers alike.

The project holds consultations in villages that have apparently stable social conditions, thereby permitting conclusive discussions and tangible agreements on ownership, rights and land use. Through vocational and on-site training, the project is contributing to human resource development as well as institutional strengthening of the forestry department.

#### **4. Conclusion**

The problems in the sustained management of natural resources and biodiversity in Pakistan are all man oriented. More than 70% of the total population of the country lives in rural areas, in or around the natural resources. People of these areas are poor and mostly practice subsistence agriculture and keep large number of livestock. Forest land is shrinking due to steady conversion into agriculture fields for food production and to meet their direst needs of timber, fuel, forage and fodder for domestic livestock. As a result, the habitat for wild fauna is disappearing. The natural resources are under heavy use which is feared to result into their fast degradation.

The role of local communities in conserving biological diversity and importance of maintaining their knowledge and practices of relevance to the conservation and sustainable use of ecological resources is well recognized. Sustained management of biological diversity could best be justified and most likely to sustain if it provides benefits to the local people. The objective of sustained management of ecological resources and preservation of biological diversity is not to separate the people and the resource but to device a compromise between the resource use and resource potential in order to satisfy their traditional rights to gather products or graze livestock.

Implementation of incentive measures is particularly useful in the conservation and sustainable use of natural biological resources/biodiversity. Since many of the actions that directly threaten the production potential and sustainability of biological resources/biodiversity are those not of government agencies but of the private sector and individuals. The actions of private people may be harmful to the resource.

Rural electrification, improvement of health and sanitation services, supply of alternate energy source, enhancing livestock production and hence income from it, development of horticulture, apiculture, trout fish farming, sericulture, cultivation of medicinal pJants and promotion of ecotourism could be good incentive measures for promoting conservation and sustainable use of biological diversity.

Resource conservation projects using these incentive measures for local communities have demonstrated that the conservation and sustainable use of biodiversity becomes effective by reducing pressure on biological resources and diverting attention and creating interest of the people towards natural resource conservation through incentive measures.