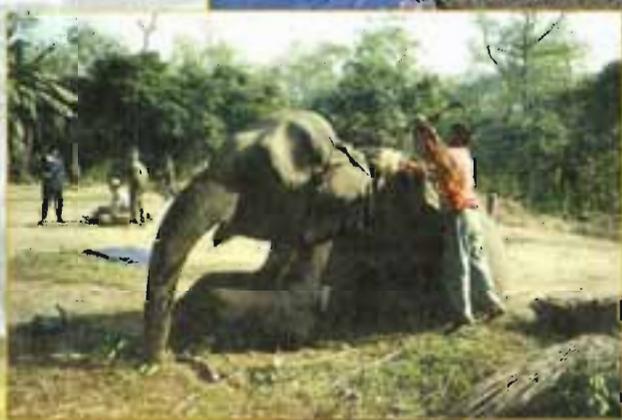
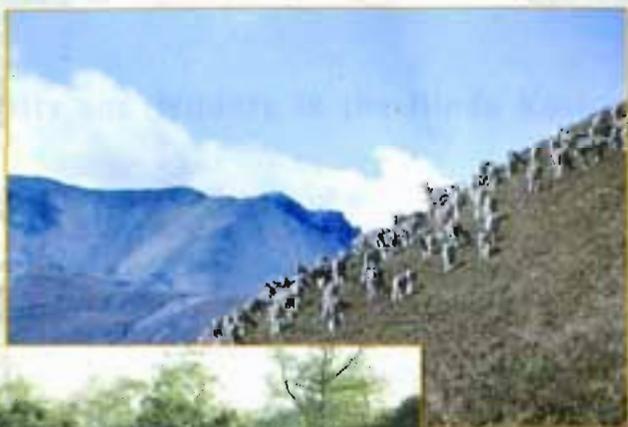


National Parks, Biodiversity and Wildlife



Six

- Top Blue sheep in Shey Phoksundo National Park, Nepal
D. Miller
- Middle Elephant at rest, Royal Chitwan National Park, Nepal
C. Richard
- Bottom Rhino in the Royal Chitwan National Park, Nepal
C. Richard

Chapter Six

National Parks, Biodiversity and Wildlife

Landscape, Biodiversity and Wildlife in the Hindu Kush–Himalayan Region

The Hindu Kush–Himalayan region has landscapes of exceptional quality in terms of amenity value (for tourists and trekkers as well as local people) and the diversity of its flora and fauna. Policies have been formulated by every country in the region to conserve different aspects of these values for a wide variety of stakeholders, and each country has signed the Convention on Biodiversity. It is estimated that there are 25,000 species of plants in the Hindu Kush–Himalayan region (about 10% of the world's flora). In addition, no less than 268 of the 666 species of domesticated plants at present recognised for their economic importance in the world come from India and China, and many of these originated in the Hindu Kush–Himalayan region. For example, according to ICIMOD (1998), there are about 200 species of fruit tree, 80–120 fruit shrubs, 230 species of vegetable, and 280 of mushrooms used in the region (Partap, *ibid*: 9). While statistics such as these are bound to be highly incomplete and arbitrarily selective, they do reveal the potential importance of the region in terms of biodiversity. In addition, the region has a level of landscape quality that is of prime global importance. Usually, the amenity value of landscape (i.e., the beauty of the landscape to which people attach a value) has been identified and conserved by means of the establishment of national parks, while the conservation of floral and faunal biodiversity has usually been undertaken through the establishment of protected areas, sanctuaries, and bioreserves. Thus, there are conservation issues of global, regional, and local importance.

The term biodiversity involves a complexity of meanings and levels. Biologists usually consider it from three perspectives: genetic, species, and ecosystem diversity. Despite much biological and ecological literature, the theory behind biodiversity and the functioning of ecosystems remains nebulous, lacking in hard data, and open to varying interpretation. Even rudimentary inventories of most plants and wildlife are incomplete for most habitats of the world and, for many, there is virtually no information at all. In this chapter, some key species are listed

for each state within the Hindu Kush–Himalayan region, but these are a tiny selection that focuses on an even smaller flagship group that happen to reflect the priorities of pressure groups within scientific communities. The choice of species for conservation, therefore, is a matter of subjective choice. According to some observers, the conservation of some biodiversity is no more than a sophisticated expression of a well-established preoccupation with the conservation of a small number of extinction-prone animal species and their habitats. The point is telling, but ignores the key qualitative judgement that there is a number of contentious problems that it would be unwise to argue away or to ignore. Despite the rhetoric, faunal conservation policy in the Hindu Kush–Himalayan region is still largely aimed at key or flagship species, and floral conservation at potentially commercial ends. In addition, estimates of biodiversity loss involve large degrees of uncertainty owing to a lack of empirical data as well as some important shortcomings in constructing credible predictive extinction models. In fact, some critics argue that the assumptions about extinction often have little scientific support at all. Thus, vagueness, multiple interpretations, subjective judgements, and bureaucratic routines have all made this policy area fraught with difficulty.

Biodiversity of Nature

The origins of the claim to conserve biodiversity tend to derive from the international scientific community, western environmental pressure groups, and from big international non-governmental organisations. The implementation of such claims, however, involves a wide range of other stakeholders at the national and, especially, the local level, some of whom may have a different notion of biodiversity altogether. Five general reasons have been given to explain the importance of maintaining biodiversity (summarised by Inskipp 1992).

- Ethical reasons: the belief that every form of life warrants respect independent of its worth to people and human welfare.
- Maintaining ecosystems: a myriad of life forms are essential for keeping air clean, stabilising weather, disposing of wastes, recycling nutrients, creating soils, controlling diseases, and pollination.
- Material and economic benefits to people: biodiversity contributes to agriculture, fisheries, medicines, industry, and so on.
- Maintaining evolutionary processes: biodiversity is the raw material of further evolution. If the genetic resource base is drastically reduced, the result is likely to be a depletion of evolution's capacities for specialisation and adaptation persisting far into the future.

The major policy issues are the means by which the values for each of these benefits of biodiversity conservation are derived, and who realises these values.

Different stakeholders assign different values. For example, the preservation of the forest may lead to an increase in the population of wild boar, monkeys, and elephants that may cause serious loss of standing crops. For example, Choden et al. (1996) report that wild boar in Bhutan (benefiting from enhanced forest growth in some protected areas) accounted for a third of the total crop loss from wild animals. The value of the preservation of a rare butterfly probably cannot be arrived at by anyone — scientist or local farmer. However, it is likely that the latter will not be nearly so interested in its preservation as some biologists. Farmers in Kullu and Mandi Districts of Himachal Pradesh are reported to have put the value of biodiversity in terms of use values, and this include 'dense forest with grasses, quality broadleaved forests, availability of leaf litter, mushrooms and medicinal plants' (Pelink 1998). While there may be a rational and scientific attempt to arrive at such values, the choice of what values and whose values is a matter of subjective choice and this usually takes place at the project planning stage in the offices of foreign or international institutions.

The ways in which different stakeholders may have an interest in an area due for protection can be summarised in a table (Table 6.1) in which the major stakeholders have interests in various aspects of the park, means by

Table 6.1: Interest groups and stakeholders in protected areas

Group	Interests/Aims	Means
Local people	Livelihood maintenance: use protected areas for subsistence needs; minor trading of products; thatch, fodder, building materials, fuel, wild foods, plant medicines; hunting and fishing	Subsistence farming, minor marketing; legal and illegal extraction of resources from protected areas
Migrant farmers	Livelihood maintenance: use protected areas for subsistence needs; thatch, fodder, fuel, building materials	Cash farming plus subsistence; legal and illegal extraction of products from protected areas
Local entrepreneurs	Profit: commercial; range of small enterprises tourist and non-tourist based	Small business enterprises, buying and selling to tourists
Tourist concessions	Profit: commercial; expansion; some revenue may be earned overseas; control tourists staying in protected areas overnight	Tourism revenues; concessions from government
Government conservation agencies	Conserving wildlife and facilitating tourist development	Enforcing park boundaries; imposing fines
Conservation pressure groups	Conserving biodiversity but with consideration for livelihoods	Lobbying, publicity
International conservation groups	Conserving biodiversity; limited interests in human welfare	International legislation, lobbying

Source: Adapted from Brown (1998)

which to represent and promote them and different sources of power. The final column shows the outcomes for each stakeholder group. In the Hindu Kush–Himalayan region, the stakeholders are usually drawn from the following groups: farmers and pastoralists as an undifferentiated category; under-represented and marginalised groups within this category (women, landless, the lower castes, artisan groups with special access requirements, and so on); government departments; political leaders at the national and local level; donor agencies; and international scientists and institutions.

It is important in the planning and evaluation of such projects to be able to provide both a stakeholder and political economy analysis. The original method of identifying stakeholders, their interests and aims, their position in political economy, their sources of power, and the means by which they reach their aims was developed for a national park and a wildlife policy in Zambia (Abel and Blaikie 1986). It has since been adapted to the analysis of the management and implementation of the Chitwan National Park, Nepal, by Brown (1998).

The major implications of a political analysis of the social relations between stakeholders in any national park or biodiversity conservation project are as follow.

- There are different actors who relate in different ways to the resources in question.
- They therefore define biodiversity or amenity in different ways and at different levels or geographical scales.
- They bring to bear on these definitions their culture, their material circumstances, and their experiences of biodiversity.
- They engage in the issue often in contradictory ways, expressed in struggles over the meaning and control of biodiversity between themselves and with outside parties. Diverse activities such as poaching, evictions, commercial negotiations, and academic arguments at international workshops are examples of these struggles.

In this policy area then, multiple meanings of 'degradation' assume central importance in the policy debate.

Management of Parks and Reserves

It will be clear that national parks and biodiversity conservation are perhaps the most controversial environmental policy issue of all and the claim-making approach to policy, as described in Chapter 2, is particularly useful here. Firstly, the high degree of contradictory perceptions and interests of

different stakeholders suggests that a negotiated policy process is absolutely essential. This process is, therefore, highly demanding of technical, political, and social skills on the part of project staff and local people. Secondly, the value of conservation of landscape or biodiversity should, whenever possible, be identified and realised locally. This is often difficult, and, in this sense, community forestry programmes usually have much less of a problem because there are tangible benefits for subsistence or sale (although, even here, these values accrue to certain groups and less to others, such as women and more marginalised people in the local political economy). In circumstances where the project cannot raise revenue from conservation directly (e.g., from eco-tourism, trekking, hunting permits, and so on), the global value to humankind in the future of preserving a particular species cannot be realised in a way to benefit local people either. Therefore, any costs borne by local people as a result of conservation should be compensated for by international stakeholders. The word 'should' appears here, as it does in virtually all policy documents. The actualisation of the principle of compensation, however, is the most challenging of all. Thirdly, the distributional aspects of this type of conservation are particularly complex and difficult to realise in an equitable and transparent way. With these particular characteristics of policy in mind, we now turn to the trends of biodiversity loss and to the policy instruments that have been used by different countries in the region.

Trends in Biodiversity and in Landscape Amenity of the Hindu Kush–Himalayan Region

The Hindu Kush–Himalayan region is particularly rich in diversity of fauna and flora, most of which exists in forests. However, there are important biodiverse resources in agriculture too; there are several landraces in the region in which important genetic material occurs. Most of the habitats that have high species diversity and endemism have been degrading throughout the region for a long time. There are several reasons for this. Firstly, there is conversion of forest land to other uses that have a lower biodiversity, usually agriculture (see also the 'environmental crisis' debate in Chapter 2). Secondly, there is the reduction of forest through shifting agriculture, with a concomitant reduction of plant species' diversity. Thirdly, there is harvesting or hunting of specific biota often within the forest that threaten many species with extinction through non-sustainable rates of use. Fourthly, there has been widespread replacements of natural forest with mono-species plantations (for example, teak (*Tectona grandis*), in northeast India, and rubber plantations in the Chittagong Hill Tracts, Bangladesh) over quite a long period. Fifthly, the commercialisation of natural resources in the region has been slow, locally uneven, but inexorable. The general direction of trend is almost universally downwards.

Below are listed some summary statements of bioresources and their changes through time for a selection of the study sites of this project.

Arunachal Pradesh, India

Northeast India falls in biogeographic Zone 4, which is the transition zone between the Indian, Indo-Malayan, Indo-Chinese biogeographic zones. It also is the meeting point of the greater Indian peninsula with the Himalayan mountains. This region, therefore, acts as a gateway for plant migration. The diversity is highest at the community level, species' level, and in endemism. Mention may be made of diversity of bamboo, orchids, marshy vegetation, savannah, sub-alpine vegetation, rhododendrons, medicinal plants, primitive flowering and non-flowering plants, botanical curios such as hot-house plants for international markets, 'snow-ball' plants, 'cushion-forming' plants, saprophytes, and insectivores such as the pitcher plant, *Drosera*, and root parasites of the family of Rafflesiaceae. The faunal diversity of the region as a whole in terms of moths and butterflies, insects, molluscs, avifauna, and microflora is also immense.

Arunachal Pradesh is particularly rich in faunal diversity. About 20% of the wild animals of India are found in the state. Notable among them are Asian elephant, royal Bengal tiger, leopard, clouded leopard, snow leopard, leopard cat, 'sambar', barking deer, musk deer, Hoolock gibbon, slow 'loris', stump-tailed macaque, 'goral', 'takin', 'serow', hispid hare, red panda, civets, and the Himalayan black bear. Some of the animals mentioned above, and several others are endemic and are endangered animals at various stages of criticality. The pigmy hog now appears to be extinct in the state, and the snow leopard is confined to a small patch of habitat in the higher reaches of the mountain ranges. Among the birds, the giant heron, Tibetan blood pheasant and crimson horned tragopan are some of the species that are endangered and vulnerable. There are also the ghariyal, Indian tent turtle, Indian flap-shelled turtle among the amphibia that are endangered. While the state has the best preserved forest in the northeast, and, therefore, provides the best environment for biodiverse flora and fauna, many of the species are hunted unsustainably.

Chittagong Hill Tracts, Bangladesh

The Chittagong Hill Tracts was in the past rich in wildlife, but indiscriminate shooting and poaching, large-scale trapping, and, above all, the invasion and destruction of their natural habitats by humans in the recent past mean that most wildlife have either been destroyed or driven away from the area. However, from local information and existing records, the elephant, the most common and most valued wildlife in this region, still lives in the area. However, after submersion of the southernmost part of the Kassalong

reserve, they have taken refuge in the north. Sambar; barking deer, wild pigs, wild dog, jackal, goat, antelopes, monkeys of different species, hares, squirrels, mongoose, wild cat, porcupines, civet cat, leopard, tiger and so on, are few of the long list of wild animals in the Chittagong Hill Tracts. In addition to these a large variety of snakes, lizards and other reptiles are also very common although many species are endangered since the local tribal people hunt them for food. The list of wild birds includes pigeons, doves, jungle fowl, partridge, chat robin, swallow, bee-eater, hoopoe, teals, quails, wild ducks, and so on.

In the past, there were considerable numbers of wild elephants in this region and in order to keep down the population regular 'khedda' operations were conducted almost every year. Since the formation of Kaptai Lake, large numbers of elephants has either migrated to the adjoining Lushai Hills in Assam or Myanmar or have taken refuge in the deep forests. The population has been reduced to a considerable extent. The condition became so alarming that, by the early 1960s, certain areas in the remaining part of the south Kassalong reserves were set aside for wildlife conservation. Adoption of such preservation measures was considered necessary not only for the sake of the present generations, but also for the appreciation of future generation. Nonetheless, these judgements, however well founded on global criteria, obviously have local repercussions on local livelihoods — particularly in view of the marginalised condition of the local human populations.

Yunnan, China

Yunnan has a particularly high degree of diversity and endemism (Editorial Committee of The New Survey of Yunnan Province 1996). There are 105 forest categories and more than 4,000 species of xylophyta, 800 species of tree: of which 59 species belong to protected tree species at the national level. In addition, there are 200 species of bamboo. Also, Yunnan is famous for the title of the 'Plants Realm' that includes 274 families and 2,076 genus, 65% of China's total. Most noteworthy are Chinese herbal medicines, which amount to 2,000 species of which 1,250 are currently used. Spice plants include 69 families, about 400 species. Ornamental plants amount to more than 2,100 species. In addition, Yunnan has 1,737 categories of vertebrate, fifty-nine per cent of China's total. There are 793 species of birds, 143 species of reptile, 120 species of amphibian, and 366 species of freshwater fish. Among them are there 46 species that belong to national-level protected wildlife, and 154 species to second level.

Northwest India

India has 7,000 endemic floral species of which about 3,000 are found in the Himalayan regions and Khasi Hills. The Himalayas has contributed species

of the genera of *Pyrus*, *Prunus*, *Sorbus*, *Rukus*, *Ribes*, *Hordeum*, *Elymus*, *Eremopyrum*, *Avena*, *Allium*, *Lepidium*, *Corum*, *Linum*, *Cicer*, and *Cucumis*. Khoshoo (1993) also says that the 'Himalayan region has been the source of several species of cereals, pulses, fruits, oil-yielding plants, spices, tuberous vegetables and sugar-yielding plants, and their wild relatives'. Added to this is a whole range of medicinal and aromatic plants. Faulty policies in the past concerning land, agriculture, and forestry, grazing, animal husbandry, fishing, wildlife and tourism have all resulted in habitat loss leading in turn to a loss of biodiversity. In plant life in northwest India, many adverse changes can be noticed. Firstly, the range of diversity has narrowed. Sixty-five species of ferns alone are threatened and common species have become rarer and some have been extirpated from specific areas (Bir 1993). Gaur et al. (1993), in recent years, carried out an extensive survey in the Garhwal Himalayas and listed 32 plant species of vulnerable nature that had not been noticed to be so earlier. Some of the threatened species include *Aconitum deinorrhizum*, *Artemesia amygdalina*, *Atropa acumina*, *Colchium leuteum*, *Dianthus coschemricum*, *Dioscorea deltoida*, *Gentiana kurroo*, *Nardostachys grandiflora*, *Saussuria* spp., and so on. Around 98 such Himalayan endangered species have been listed (Trivedi and Sudarshan 1994). Many plants have suffered over-extraction, e.g., *Rauvolfia*, *Dioscorca*, *Podophylum*, *Saussurea*, *Nardostachys*, and so on. Secondly, the recession process had brought forth substantial floristic modifications sometimes changing the whole composition of the forest type. A classical example that readily comes to mind here is the conversion of banj (*Quercus incana*) forest into Chir pine (*Pinus roxiburghii*) forest in which a multi-use species (used as fuel, fodder, fertiliser, and for water retention) was, over time, supplanted by a coloniser (Chir pine).

This area has rich floral endemism. In the region, 125 plant species have wild relatives of crops, such as cereals, and might have uses in future. The floristic variation is enormous. The region is a storehouse of a large array of diversity in fodder, vegetables, fruit and medicinal plants growing in valleys, on hill terraces, and on mountain tops, mostly under rainfed conditions (Arora 1993)

Bhutan

'Located in the eastern Himalayas, Bhutan is one of the ecological wonders of the world' claims the Eighth Five-Year Plan (GoB:56). The country straddles two biogeographical realms: the Palearctic realm of the temperate Euro-Asia and the Indo-Malayan realm of the Indian subcontinent. The result is a country rich in biodiversity, with its natural forests still largely intact. The biomes of Bhutan stretch from the subtropical in the south (100 m) through temperate in the central interior to an alpine zone in the north (7,550m).

Animals, such as tiger, elephant, one-horned rhinoceros, Asiatic water buffalo, pygmy hog, and the rare golden langur exist in the lush tropical forests of the south, while the snow leopard, blue sheep and taking are found in the cool forests and alpine meadows of the north. There are over 165 species of mammals and more than 770 species of birds identified so far.

Policy Instruments Laws, Rules and Conventions

Bhutan

The Forestry Services' Division of the Ministry of Agriculture is the lead agency for biodiversity conservation and sustainable management of protected areas and protection of wildlife. In particular, the Nature Conservation Section of this division is entrusted with the responsibility of formulating, implementing, and monitoring biodiversity programmes. The Planning and Policy Division of the Ministry of Agriculture assists the division to identify, review, and recommend policy revisions. At the national level, the National Environment Commission is the overall coordinating agency for national environmental issues. The National Environmental Strategy is the basis for future planning and management of wildlife.

Bhutan Trust Fund for Environment Conservation was one of the major sources of funding for implementing conservation programmes during the Seventh Five-Year Plan. It contributed to the development of human resources, increased park infrastructure, and supported a pilot project on integrated conservation and development programme. It will continue to fund conservation programmes not covered by other donors.

The Royal Society for Protection of Nature is the only non-governmental organisation in the country that deals with conservation of nature. The organisation focuses its effort on creating conservation awareness. This is achieved mainly through schools and training institutes. Its programmes are developed in close cooperation with the Forestry Services' Division and other organisations.

Bhutan is party to the Convention on Biological Diversity. Policy and act revision is an obligation of being a signatory to the convention.

In the past, the protected area system was fully controlled by the government and managed purely on the principle of conserving biodiversity. Local people were not involved in the decision-making process. This was because human activities, particularly agricultural activities, were limited in protected areas. Change in the role of forests and the need to involve affected communities mean that the participation of local people

and the concept of integrated development are key to current protected area management. The first step in involving the people in policy and legislation was initiated with adoption of the Forest and Nature Conservation Act in 1995. Its central focus is that the needs and rights of communities living inside or adjacent to protected areas are now considered as important as the conservation of the biodiversity itself.

Shortage of skilled staff has always been a constraint. This shortage is mainly because of the low intake of graduates as a result of a general shortage of qualified graduates in the country; the large number of projects; the limited staff of the Nature Conservation Section; and the need to send existing staff for further training. There are 12 professional and support staff at the Nature Conservation Section headquarters against a total requirement of 37. This staff has a large number of projects and other assignments to implement. For example, the Black Mountain National Park Project has only 11 staff against a long-term requirement of 50.

Other institutional aspects affecting nature conservation are lack of information and databases, inadequate mechanism for enforcing protected area policy, rules and regulations, and lack of infrastructure and equipment to implement management plans.

The forest policy of 1991 gives priority to conservation of biodiversity and the environment; and it places revenue generation in a secondary position. While this is the overall policy, the main objectives are

- biodiversity issues should be integrated into economic development plans and programmes
- provision of support to parks and protected areas, and
- development of information on biological diversity for conservation and sustainable utilisation of biodiversity resources.

The government develops management plans through a participatory process. Development activities are introduced in the wildlife area in accordance with these management plans and implemented with the participation of local communities. While preparing these plans, sustainable alternatives to compensate inhabitants deprived of economic opportunities resulting from limited access to protected sections of the wildlife area are identified for implementation.

The government is continuously considering its policy on wildlife. Areas of concern for policy analysis are identified and debated. Some current areas of concern are highlighted here. The protected areas or national parks' policy

needs to be reassessed because agricultural land is limited, and because of crop damage by wildlife. In view of the need for increased food production, the government has to make the best use of the limited land resources. Some land most suitable for agriculture is in protected areas. The problem of crop damage as a result of the increased wildlife population has been consistently reported throughout the country.

According to the National Environment Strategy, hydropower is one of the main avenues for sustainable development. In the light of this, the protection of wildlife through better planning and management of protected areas is a continuous concern.

Biophysical problems in biodiversity conservation are overgrazing, fire, collection of medicinal plants, and poisoning of predators in alpine areas; shifting cultivation, forest fire, clearing of forests for orchard development, and logging in the temperate zone; and poaching, mining, and encroachment in the subtropical zone. The extent and intensity of these problems are increasing because of increased pressure on limited land resources. With rapid population growth, these problems will become significant in the future. Therefore, they are concerns that permanently demand the attention of the government.

The Forest and Nature Conservation Act 1995 is the main document that provides the legal framework for the conservation and management of protected areas and wildlife. Its salient features as follow.

- Any area may be declared a protected area for the preservation of natural beauty, protection of biological diversity, and management of wildlife.
- Each protected area should be managed by a plan approved by the head of the Forestry Services' Division.
- The head of the Forestry Services' Division is empowered to issue rules to regulate or prohibit any activity within a protected area.
- All wild animals listed in Schedule 1 are totally protected: they are not to be killed, injured, destroyed, captured or collected.
- The Ministry of Agriculture is allowed to issue special permits for taking or exporting of any animal or plant listed in Schedule 1 for purposes approved by the Ministry of Agriculture.
- The Ministry of Agriculture can allow a person to keep any animal or plant that is listed in Schedule 1.
- Appropriate punishment will be awarded to offenders.

The Biodiversity Action Plan for Bhutan (MoA 1998) is the other legal document for the protection and conservation of wildlife. The government

developed the Biodiversity Action Plan since Bhutan is a signatory to the Convention on Biological Diversity.

The Ministry of Agriculture instituted a core working group to coordinate the preparation, formulation, and finalisation of Biodiversity Action Plan. The group was assisted by members from the Ministry of Planning, the National Environment Commission, National Institute of Traditional Medicines, WWF, the Royal Society for Protection of Nature, the Ministry of Trade and Industry, Bhutan Tourism Authority, Bhutan Chamber of Commerce and Industries, Ministry of Health and Education, Ministry of Finance, UNDP, and senior staff of the Ministry of Agriculture. Representatives of the people were also members. Thus the Biodiversity Action Plan is a product of a multidisciplinary team. Several national workshops, regional workshops, and other brainstorming sessions to consult, discuss, review, and analyse and coordinate its development were conducted. An extensive field visit was made to collect information. Relevant organisations were given the opportunity to comment on the draft. The draft was finalised with comments from a final workshop and submitted to the Ministry of Agriculture for approval. The government considers this document as part of an ongoing process. There will be revisions as conditions change since ecosystems are dynamic.

The Biodiversity Action Plan proposes a number of objectives and recommendations leading to the conservation and sustainable use of biodiversity. Its focus is mainly on the following.

- Improvement of the information base on biodiversity
- Use of this information to strengthen the protected areas system
- Involvement of local communities in managing protected areas
- Continuous monitoring of development in protected areas
- Support for development of the national capability to ensure the productivity, diversity, and integrity of biodiversity and natural systems.

The government implements various conservation programmes. The number and nature of these programmes are increasing with improved management functions. The following are some of the major programmes; some are at an advanced stage of implementation while others are in the pipeline.

- The Royal Manas National Park management plan

This WWF-assisted plan started in 1996 and is for three years. It aims to improve management of the park through the following five components.

- Demarcation of boundaries for effective patrolling and enforcement of park regulations
 - Conservation research on species such as golden langur, hornbill, and tiger
 - Extension and publicity services for developing a visitor information centre, organising students and teachers' excursions, developing extension materials, and conducting conservation awareness meetings
 - Strengthening of park management facilities
 - Enhancement of capacity-building by providing training in park management
- Institutional support and species' conservation programme

This three-year WWF-assisted programme started in 1996 and aims to assist the Ministry of Agriculture in developing a capacity for park management. It includes the following main components.

- Construction and operationalisation of the Nature Study Centre at Kebithang
 - Preparation of a plan for Phibsso Wildlife Reserve
 - Preparation of a tiger distribution map and a tiger monitoring system
 - Assistance to anti-poaching programme
 - Support for database management using GIS technology
- Integrated management of Jigme Dorji national park

This co-financed project by the Global Environment Facility, UNDP and the government will strengthen the integrated management of Jigme Dorji National Park. The project will focus on the implementation of selected activities through the promotion of sustainable livelihoods and development of alternative approaches that help to conserve and sustainably use the park's biodiversity.

- Management of Bomdiling wildlife sanctuary

This Danida-supported five-year project is to support the management of Bomdiling Wildlife Sanctuary. An operational plan has been prepared and will be implemented over the next four years. The park office has been opened, and the park manager and other staff posted.

Conservation activities under other programmes. Besides these programmes, many conservation activities are built into other forestry-

related programmes that are supported by other organisations such as the Bhutan Trust Fund for Environment Conservation and bilateral donors. These conservation activities include protection of endangered species of flora and fauna outside protected areas; reforestation and afforestation; and preparation of environmental conservation guidelines.

The protected area management system is at an initial stage. It is, therefore, too early for the policy to have any tangible impacts. However, there are three obvious general points associated with the current programme. Firstly, the declaration and demarcation of nine protected areas is an achievement. For a small and mountainous country, like Bhutan, maintaining 26.5% of the total area of the country under protected area indicates an undisputed commitment to conservation of the environment. Secondly, this protected area system is the habitat of endangered flora and fauna. In fact, this protected area has been called a 'biodiversity supermarket'; this has national prestige and global significance. Thirdly, crop damage by wildlife is a recurring problem in the farming community. Beyond a certain level of damage, agriculture will not be sustainable. This problem contradicts the food self-sufficiency policy. No compensation programme or any other remedial measures have been instituted as yet.

In future, impacts of the wildlife programme should be considered along with the following central concerns of the government.

- The local community should not fall prey to adverse impacts of policy. Wildlife should not pose any serious problem to the community living inside or adjacent to protected areas.
- There should not be conflicting land uses. The overall national land allocation should consider the growth rate of human population and the need for additional agricultural land.
- Protected area management should be a commercial venture; the aim is that protected areas should be self-financing from revenue generated from their activities and products. Currently, external donors finance protected area management plans.

India

Management of biodiversity is based on international, national, and state policies, statutes, regulations, executive orders, treaties, conventions, and other international agreements. In India, the history of such laws goes back to the nineteenth century. The 'Wild Birds and Animals Protection Act' was brought into effect in 1887 but repealed in 1912. The 'Forest Act 1927' provided for game protection. The Indian Board of Wildlife was established

in 1952. In 1972, a specific 'Wild Life Protection Act' was promulgated that regulated and controlled possession, trapping, or shooting of wild animals and their transport for export. Threatened species are absolutely protected and the rest offered graded protection. The 1972 law was amended in 1991 to improve conservation practices. A total ban on the hunting of all wild animals was imposed. Search and arrest powers were given to wildlife officials and punishments for infractions of law enhanced. Wild plants were brought within the definitional purview of wildlife. The Central Government has made it obligatory for state governments to give representation to tribals on the State Wildlife Advisory Boards to ensure that their interests are taken into account. Even a private individual can now file a complaint in a court of law in case of any infraction of the amended wildlife law. Honorary wildlife wardens are required to be appointed in all districts. The message of the law is that effective wildlife protection needs public involvement, public acceptance, and public participation.

Wildlife protection has concerned the international community since the late 1940s. In 1979, India began preliminary work. After the Minsk Conference on Biospheres in 1983, an action plan was drawn up and 13 potential biosphere reserves were identified. Three biosphere reserves were set up in the Himalayan region, of which one, at Nanda Devi, is located in the northwest Himalayan region of India. In 1973, India became a signatory to the Convention of International Trade in Endangered Species of Wild Fauna and Flora. In the course of time, the Botanical Survey of India set up Germ Plasm and Gene Sanctuaries. A National Bureau of Plant Genetic Resources was established under the Indian Council of Agricultural Research with a network of 10 centres, three of which are located in the northwest Himalayan region of India. There is also the National Facility of Plant Tissue Culture Repository. At both these facilities, the number of seed and tissue samples exceeds 150,000.

India, therefore, has well-developed policies in the area. The problem arises in assessing the real impact of these policies upon the environment and local people's livelihoods. The policies are extensive and many formal organisations are in place, but at present it is not possible to explore the impact of these policies on the ground.

Nepal

Nepal's wildlife policy aims to conserve forest ecosystems, wildlife habitats, and genetic resources through the establishment of national parks, wildlife reserves, gene banks, zoos, and botanical gardens (MPFS 1988). Policy claims that the country has taken up her share in preserving representative Himalayan ecosystems, but it also recognises that, in the process of

establishment of protected areas, the local people have lost their traditional sources of forest produce. This loss is supposed to be compensated by developing alternative sources.

There are many programme components mentioned in the Master Plan for the Forestry Sector 1988. These are as follow.

- Development of infrastructure that blends with the nature and character of the protected area
- Building good relationships with people living adjacent to protected areas through conservation education; developing alternative sources of forest products; better habitat management; paying greater attention to population dynamics; better management of visitor use and tourism; and ensuring the protection of natural and cultural values

To support these thrusts, policy documents state that legislation concerning protected areas and genetic resources will be improved; the Department of National Parks and Wildlife Conservation's management capacity will be strengthened; training and logistical support to field staff will be increased; resource surveys and studies will be conducted; and management plans will be formulated to account for the needs of people in adjacent areas, the proper handling of visitor use, and the preservation of natural and cultural values. The intention, in principle, is clear. There is growing evidence of the erosion of biodiversity in Nepal. Currently, 26 mammals, nine birds, and three reptiles have been legally classified as endangered. It is estimated that 10 species of highly valuable timber, six species of fibre, six species of edible fruit trees, four species of traditional medicinal herbs, and some 50 species of little known trees and shrubs might be lost for ever. In addition, the habitat for 200 species of birds, 40 species of mammals, and 20 species of reptiles and amphibians might be severely affected (MPFS 1988).

The government's main efforts in biodiversity conservation have involved an extensive network of national parks and protected areas developed over the past two decades, covering 2,105,100 ha, almost 14% of Nepal's total land area. The protected area network includes eight National Parks, four Wildlife Reserves, three Conservation Areas, one Strict Nature Reserve and one Hunting Reserve.

The government's policies on biodiversity conservation include improvement in the relationship between the local communities and park management, demarcation of the core areas inside parks for strict conservation and buffer areas for sustainable resource management, promotion of tourism in conformity with resource conservation and environmental protection, and involvement of the local bodies and private organisations in the preservation and maintenance of natural and cultural heritage resources.

In order to implement the policy, the government has developed a legal framework and the following are the legislations related to protected areas.

- The National Parks and Wildlife Conservation Act 2029 (1973), amendment in 1983
- National Parks and Wildlife Conservation Regulations, 2030 (1974), amendment in 2035 (1979), in 2042 (1986), in 1995 (Buffer Zone Management Rules 1995)
- The Wildlife Reserve Regulations 2034 (1978), amendment in 2042 (1986)
- Forest Rules 2051 (1995)

At least in theory, the government has realised that long-term management of protected areas depends on the cooperation and support of local people and ensuring the economic development of the local communities. The habitation areas surrounding the national parks have been classified as buffer zones and a necessary amendment in the National Parks and Wildlife Conservation Act 1973 has been made in National Parks and Wildlife Regulations 1995 for sharing the revenues of a national park with the local communities living within the buffer zone.

Apart from the national policies related to protected areas, Nepal as a state is a signatory and member of a number of international conventions and organisations related to wildlife and environmental conservation (Box 1).

BOX 1 **International Conventions to which Nepal is a Party**

- Plant Protection Agreement for the Asia and Pacific Region, State Party in 1965
- UNESCO Man and Biosphere Programme (MAB), State Member in 1974
- IUCN - The World Conservation Union, State Member in 1974
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), State Party in 1975
- World Heritage Convention, State Party in 1978
- World Conservation Strategy, Contributor, 1981
- International Centre for Integrated Mountain Development (ICIMOD), State Member in 1983
- International Tropical Timber Agreement, State Party in 1983
- Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention), State Party in 1987
- Convention on Biological Diversity, (ratified in 1993) Signatory in 1992
- WWF Nepal Programme, Signatory in 1993
- South Asian Cooperative Environmental Programme, State Member in 1994
- Framework Convention on Climate Change, Signatory in 1994

Source: DNPWC (1998)

The National Park and Wildlife Conservation Act 1973 provides for five categories of protected area to help achieve the conservation of ecosystems and genetic resources. As defined in the act, these are as follow.

- National Park: an area set aside for conservation, management, and utilisation of flora and fauna together with the natural environment
There are eight national parks in the country.
- Wildlife Reserve: an area set aside for the conservation of animal and bird resources and their habitat
There are four wildlife reserves.
- Conservation Area: an area managed for the sustainable development of human and natural resources
There are three conservation areas.
- Strict Nature Reserve: an area of ecological significance set aside for scientific study
Makalu Barun is the only protected area in Nepal in this category.
- Hunting Reserve: an area set aside for the management of animal and bird resources for hunting purpose.
There is one hunting reserve.

The Northern Areas and North West Frontier Province, Pakistan

Wildlife conservation is still a relatively neglected feature in the North West Frontier Province although the mountainous region is home to rare species such as the western tragopan, the 'markhor' and the Himalayan musk deer. The province has two national parks, five wildlife sanctuaries, and twenty-seven game reserves, but its wildlife population is believed to be under grave threat from deforestation and overgrazing.

The Himalayan moist temperate forest is considered one of the four most seriously threatened ecosystems in Pakistan. Much of this forest is found in Kohistan district. Here, the stretch in the Palas Valley is considered among the most pristine in the country and houses the tragopan, one of the most endangered species of pheasant in the world. The pheasant species was first discovered in 1989 by a team from the International Council for Bird Preservation. Subsequently, NGOs, such as the Himalayan Jungle Project, have been active in the area and consolidated their activities by providing much needed assistance to local populations during widespread floods in 1992. The Palas Valley forest was scheduled for harvesting in 1993, but the combined efforts of national and international NGOs, who effectively lobbied the Forest Department, succeeded in preventing it.

The main policy-making body for wildlife is the National Council for Conservation of Wildlife, a federal government agency that also has primary responsibility for reviewing wildlife legislation. The National Council for Conservation of Wildlife has no executive authority, however, and cannot implement projects. In the Northern Areas, wildlife issues are handled by the Forest Department and consequently end up being secondary to the forestry sector. The recent reorganisation of the Forest Department, and its re-designation as the Department of Forests, Parks and Wildlife was intended to highlight the department's role in the conservation of biodiversity and wildlife protection in addition to forestry. Wildlife issues are now handled by a Divisional Forest Officer and a Director of Wildlife. However, the management of the Khunjerab National Park is handled by a separate wing within the department which is headed by a Conservator.

Case Study of Khunjerab National Park, Pakistan

The conflict over Khunjerab National Park is an example of how wildlife legislation, policy, and management can go seriously wrong when the approach adopted for implementation is arbitrary and autocratic. The Khunjerab National Park, which was created in 1975, covers an area of 2,270 sq.km and extends over three valleys — including Khunjerab, Ghujerab, and Shimshal. The region formed the northern reaches of the state of Hunza, and since the early nineteenth century it has been the prime grazing grounds and summer pastures used by the people of Hunza and Gojal and the 'Mir' of Hunza.

The Mir of Hunza devised an elaborate system of grazing rights and regulations. Grazing was divided amongst various villages which were allowed to use the lands after payment of a tax. When the state of Hunza was abolished, people responded by establishing claims over wastelands and pasturelands that had previously belonged to the Mir, thus seizing the opportunity to continue grazing livestock without payment of taxes. The government failed to hold a dialogue with the people, depending instead upon the arbitrary proclamation that all wastelands and rangelands that had belonged to the Mir now belonged to the State of Pakistan. In the ensuing confusion, the government made the further announcement regarding the establishment of the Khunjerab National Park.

The park was created primarily to provide protection to the Marco Polo sheep, which was abundant in the area (a census conducted in the early 1970s put the population at 500 head). However, the boundaries of the park were delineated in an arbitrary fashion, and detailed surveys of wildlife habitats were lacking. To this day, there is evidence that important habitats of the Marco Polo sheep remain outside the park, whereas areas with

relatively low wildlife populations are considered integral components (Ahmed 1993). While most of the park remained without a management plan and inhabitants of surrounding villages remained ignorant of the boundaries, a core zone of 30 sq.km was defined and was closed for grazing with immediate effect. No alternative grazing lands were identified nor was compensation made.

The effects of this declaration were instantaneous; the people of Shimshal launched an agitation against the park authorities and refused to let wildlife authorities enter the area. By 1989-90, communities had organised themselves to the extent that the people of Khunjerab challenged the establishment of the park in court and demanded compensation for the loss of their grazing rights. In August 1990, graziers leading herds of up to 10,000 animals invaded the core zone as a protest. The incident served to highlight the necessity of formulating a management plan that would take into account the needs of communities. Wildlife authorities invited WWF to send in consultants to do so. The plan was completed in 1993 but has yet to be accorded final approval. It includes proposals specifying organisational set up and laying out modalities of a proposed plan to phase out grazing gradually after providing people with alternative means of livelihood.

The management of the Khunjerab National Park is a glaring example of a policy failure that was precipitated by government's inability to recognise traditional resource-use systems prevalent in an area. The old, more personalised system of government was replaced with one in which authority came from distant institutions that did not fully understand the society that they were meant to administer. The management plan acknowledges that the population of endangered species, particularly the Marco Polo sheep, has actually declined since the park was designated. Although reasons cited for this decline range from the construction of the Karakoram Highway to hunting on the Chinese side of the border, it is generally acknowledged that hunting and poaching may actually have increased after creation of the park as communities tried to render endangered species extinct in the hope that they would be left to continue with their old way of life (Ahmed 1993). The Khunjerab experience is now widely cited as an example of how an exclusionary conservation programme can actually serve to make protection of wildlife more difficult.

Case Study of the Annapurna Conservation Area Project (ACAP), Nepal

ACAP is an integrated conservation development project that attempts to link biodiversity conservation in protected areas with social and economic development in surrounding communities (over 40,000 mostly poor rural

farmers). The aim of the project is to protect and conserve nature and natural resources through integrated community and tourism management. It is being implemented by the King Mahendra Trust for Nature Conservation (KMTNC), a Nepali NGO established by act of parliament. It was finally set up after many years of internal disputes. International funding followed, and implementation soon after. Thorough consultation with local people was carried out, and it became clear that the original intention of the establishment of a national park would meet widespread local opposition. Thus the notion of a conservation area with multiple activities and income-earning opportunities was developed instead.

Over 30 thousand foreign trekkers visit this area each year, which has led to the development of hundreds of lodges and tea shops along the trails. Where tourism has become important to the local economy, it has also led to serious environmental problems. The forests have been cleared to provide fuelwood for cooking and heating for the visitors. Expanding agriculture, growing water pollution, poor sanitation, and increased litter on trekking routes are major environmental impacts resulting from the establishment of the conservation area.

The project claims to have made significant progress in motivating local populations to participate in natural resource management decisions in order to mitigate the adverse environmental impacts mentioned above (KMTNC 1997). A system of land-use zoning was established. Conservation and development committees (elected from local village development committees) were set up. These have considerable local powers, and it is significant that there is no overall master management plan. Locally made decisions are often initially unpopular with certain interests, but these are usually overcome because they are locally made and locally enforced. For example, it was decided that no fuel should be cut in the Chomrung area; this was opposed by the dozen or so lodges in the area that relied on fuelwood to cook meals for tourists. In the end, they complied and passed on the higher costs of importing kerosene to tourists and trekkers by charging higher costs for meals.

As Brandon and Wells (1992) report the project has been able to generate significant amounts of revenue from tourism. However, it has not been distributed evenly among the local communities. The principal beneficiaries have been the lodgers and tourism-related business entrepreneurs. There are also continuing environmental problems connected with increased volumes of trekkers. Nonetheless, in spite of formidable problems, the project must be judged a substantial success, as judged by many stakeholders, both locals, national, and international. The key factors here are adequate initial funding; political support at the highest level within Nepal; lengthy involvement of skilled local (at least, Nepalese, rather than

foreign) negotiators; listening to local views; being flexible in the design of the project; the ability to raise considerable revenues that accrue to the area; and trusting local people to shape the project to local needs and politics.

Costs and Benefits: National Parks, Wildlife and Biodiversity Projects

One of the fundamental policy problems is the realisation in practice of the value of conservation. The value of landscape amenity in terms of attraction to tourists and trekkers can usually be more easily realised than that of biodiversity. Therefore, it is easier to enlist the support of a number of stakeholders who would gain from the establishment of a conservation area, than in a national park or in a sanctuary or bioserve. In the latter case too, most of any revenue will accrue to the state. In the case of multiple-use projects, a share of the revenue gained from entry fees and trekking permits, revenue accruing to transport contractors, hotel owners, and to a wide range of paid employment (porters, hotel staffs, guides, and so on) offers a number of opportunities for realising the benefits of the conservation or enhancement of landscape amenity. These opportunities are clearly attractive to the more entrepreneurial members in the project area. The Annapurna Conservation Area in Nepal is a case in point, and the project was a political success from a local point of view. The Khunjerab National Park in Pakistan illustrates the opposite, and the project was a political failure locally, and the conservation objectives were frustrated.

The problems of effectively realising the value of biodiversity or preserving a single endangered species are more serious. Eco-tourism is often invoked, but is not a feasible option for the vast majority of conservation projects in the Hindu Kush-Himalayan region. The reasons include inaccessibility, lack of infrastructure, underdeveloped marketing strategy, and intense competition from more accessible and better known eco-tourist destinations. Under certain circumstances it may be possible to raise income from the sale of endangered species, provided that they do not appear on the listings of international or national treaties.

However, it is much more difficult to realise the value of conservation of entire habitats or of animal species that have no consumptive and productive value for the local population. In these cases, the value is to humankind, in general, and the cost of conservation should be entirely borne by the international community and specifically donor-driven projects. The cost of national parks and other protected areas usually falls upon local farmers and pastoralists. There are usually exclusionary regulations that negatively affect livelihood opportunities. These comprise the closing of grazing areas to pastoralists at higher altitudes, and of the forest for the diverse range of forest products used

in subsistence (wood fuel, construction timber, fodder, thatching grass, and wild foods). In addition, there may be costs from incursions of wild animals into standing crops as already mentioned.

There are a number of general conclusions to be drawn from conservation projects in the region.

- There should be a clear definition of the groups who will benefit and/or bear the costs of the project. This can be a difficult and politically sensitive task. In cases in which a migratory bird or widely ranging animal is the object of conservation, there arises the issue of 'whose animal is it?'. In the case of the falcon conservation project in the Northern Areas of Pakistan, for example, the bird migrates over some thousands of miles, and it is only a temporary inhabitant of the project area. While most of the captures of the birds occurred in the project area, the cost and benefits of conservation are not wholly confined to the inhabitants of that area. In the case of the conservation of forest, the same issue arises in community forestry, whereby a number of different, spatially separated groups may claim customary rights to the same forest. The allocation of any cost or benefits as a result of closing the forest is therefore usually a contentious issue.
- There should be the prospect of clear benefits or compensation for costs incurred. The latter usually requires a more trusting attitude between local people and impersonal and distant institutions that may promise compensation at some future date. The history of compensation in such cases, especially from the state involved, is full of corruption, broken promises, incompetence, and delay — an experience bitterly learned by many local groups.
- The unusually wide range of stakeholders, complex issues of the identification of cost and benefits, who loses and who gains in the community, and difficult technical management issues all suggest that intensive negotiation with clearly defined stakeholder groups is necessary. In essence, the necessary formation of local groups involves the same principles as common-property, resource-management institutions. The object of conservation becomes the bioresources themselves. It becomes common because the costs and benefits are linked to a group. It becomes a property regime because there have to be sets of rules and day-to-day management practices, all of which are agreed upon by the group.
- The distributional aspect of benefits and costs within the group are also important — at least for (some of) the ideological agendas of international founders. The issue of gender and wealth/power is often a neglected aspect of project design that has led to resentment and conflict within both target groups (Eyazaguirre and Raymond 1995) and outside project personnel.

Nonetheless, political realism suggests that it will be the dominant political leaders at the local level, who have to be persuaded in the initial stages. These are usually, though not always, the more wealthy men of the area, and it takes skilful tactics to ensure that gender and general equity issues are addressed. These are sometimes done so formally (by including a mandatory number of women and other marginalised groups in local management committees), but are quietly flouted in practice.

- Unfortunately, there are many instances of partial or complete failure of projects of this kind. The creation of institutions that are both technically efficient in terms of conservation objectives, and that has successfully negotiated the interests and aims of the major stakeholders involves high transaction costs on the part of project staff and the local people, are unfortunately few. Success requires charismatic, committed, and skilled personnel from both outside and at the local level over a considerable period of time. These human resources are difficult to find and retain for sufficiently long periods. Usually the resources come from foreign aid donors, the policy instrument is the project and the agenda is driven by an international 'epistemic community' that has the commitment and can put a highly skilled team on the ground for a sufficiently long period. Therefore, doubts arise over the sustainability of the projects after the withdrawal of funds and personnel. Hopes of automatic renewal of funding often are not fulfilled, since the priorities of donors in this sector are volatile.
- Economic valuations of biodiversity and nature conservation are useful. However it is often difficult to realise these values and to pass (most of) them to local people who will then, being economically rational, have incentives to protect them. Eco-tourism and charges for scientists for study are often invoked, but seldom come to the rescue.

Finally, the gaps between intention and practice remain clouded in promotional write-ups of projects, optimistic projections, and formal, bureaucratic target chasing. It is simply difficult to provide an account based on evidence on the impact of policy in this area. Also, the contested nature of the objectives of conservation make it even more difficult to identify indicators of success that go beyond narrowly defined technical ones. This report has been able to include a few case studies and to rely on secondary material for others. The most tentative conclusion — and it is hardly a novel one — is that many projects do not live up to their expectations, while a few exceed them. Locally agreed criteria for monitoring and evaluation, locally negotiated baseline studies, and periodic participatory reviews would greatly assist both the success of projects and enable much more detailed lessons to be learned by future projects.