

# **Conservation of Mountain Ecosystems: A People and Management Model Plan for Nature Reserves**

## **—A Case Study of Pidaung Wildlife Sanctuary**

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### **People and Biodiversity Conservation in the Hindu Kush-Himalayan Ecoregion**

Establishing nature reserves is one of the important measures for protecting natural resources and many countries have already established conservation systems. In 1977 there were 30,350 nature reserves in the world. Now there are many more areas demarcated for conservation. This is an important practice for protecting good forest cover as well as environments that have been severely degraded. Inappropriate human activity is one of the key driving forces causing losses in biodiversity and environmental degradation and in return it threatens its own survival. Sustainable development is a new vision; people have learned from their development history.

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The Hindu Kush-Himalayas (HKH) is the working area of the International Centre for Integrated Mountain Development (ICIMOD) and encompasses a working area known as an ecoregion. This region includes the HKH of eight member countries: Afghanistan, Bangladesh (Chittagong District), Bhutan, China (Qinghai-Tibetan Plateau and Hengduan Mountains), India (northern mountainous area), Nepal, and the northern parts of Myanmar and Pakistan. This ecoregion, situated in the largest mountain system of our planet, forms a complex of special ecosystems. The Qinghai-Tibetan Plateau is also known as the third polar region of the Earth and has colourful landscapes, extremely differentiated ecosystems, and a rich biota with diversified genetics.

This young, dynamic ecoregion has experienced great change in the past 100 million years in terms of the evolution of its geology, geomorphology, climate, vegetation, and fauna. Today it is sensitive to global change. The ecoregion accommodates a diverse culture, which is supported strongly by its diverse ecosystems. The region is inhabited by many important species of animals and plants named in the list of endangered species: giant panda, tiger, elephant, red panda, and the Indian one-horned rhinoceros. Due to population growth and development, as well as poaching and illegal trading in wildlife, the environment is deteriorating. But many natural reserves and protected areas have been established, and many laws and regulations addressing biodiversity conservation have been made. Biodiversity conservation in this region is a tough, long-term task with the

participation of the local people being of paramount importance. The International Centre for Integrated Mountain Development has been working for more than 15 years in this region and will be required to make a major contribution towards regional collaboration.

The HKH member countries and local people are the main stakeholders of and important contributors to biodiversity conservation.

## The contributions of member countries to biodiversity conservation in The Hindu Kush-Himalayan Ecoregion

### The example of Nepal

Nepal, a country that can be considered as a large slope of the southern Himalayas ranging from tropical valleys to snow peaks, has been making great efforts for biodiversity conservation. Details of the protected areas and buffer zones are presented in Figure 1 and Tables 3 and 4. There are also a series of activities that have been carried out including the Parks and People Project (PPP).

**Table 3: Protected Areas in Nepal (1999)**

Descriptions	Area (km <sup>2</sup> )	Year of establishment	Physiographic region
Royal Chitwan National Park (World Heritage Site (WHS) 1984)	932	1973	Terai-Siwalik
Sagarmatha National Park (WHS 1979)	1,148	1976	High mountains-High Himalayas
Royal Bardia National Park	968	1976/1998	Terai-Siwalik
Makalu Barun National Park	1,500	1991	High mountains-High Himalayas
Langtang National Park	1,710	1976	High mountains-High Himalayas
Shey Phoksundo National Park (WHS)	3,555	1984	High-Trans Himalayas
Rara National Park	106	1976	High mountains, wetland
Khaptad National Park	225	1984	Middle-High mountains
Koshi Tappu Wildlife Reserve (Ramsar Site 1987)	175	1976	Terai
Royal Sukla Phanta Wildlife Reserve	305	1976	Terai
Parsa Wildlife Reserve	499	1984	Terai-Siwalik
Kanchanjunga Conservation Area	2,035	1997	Middle mountains-High Himalayas
Annapurna Conservation Area	7,629	1992	Middle mountains-High Himalayas
Manaslu Conservation Area	1,663	1998	Middle mountains-High Himalayas
Shiva Puri Watershed and Wildlife Reserve	144	1984	Middle mountains
Dhorpatan Hunting Reserve	1,325	1987	Middle mountains-High Himalayas
Total	23,919		Terai-High Himalayas

Source: DNPWC (1999a)

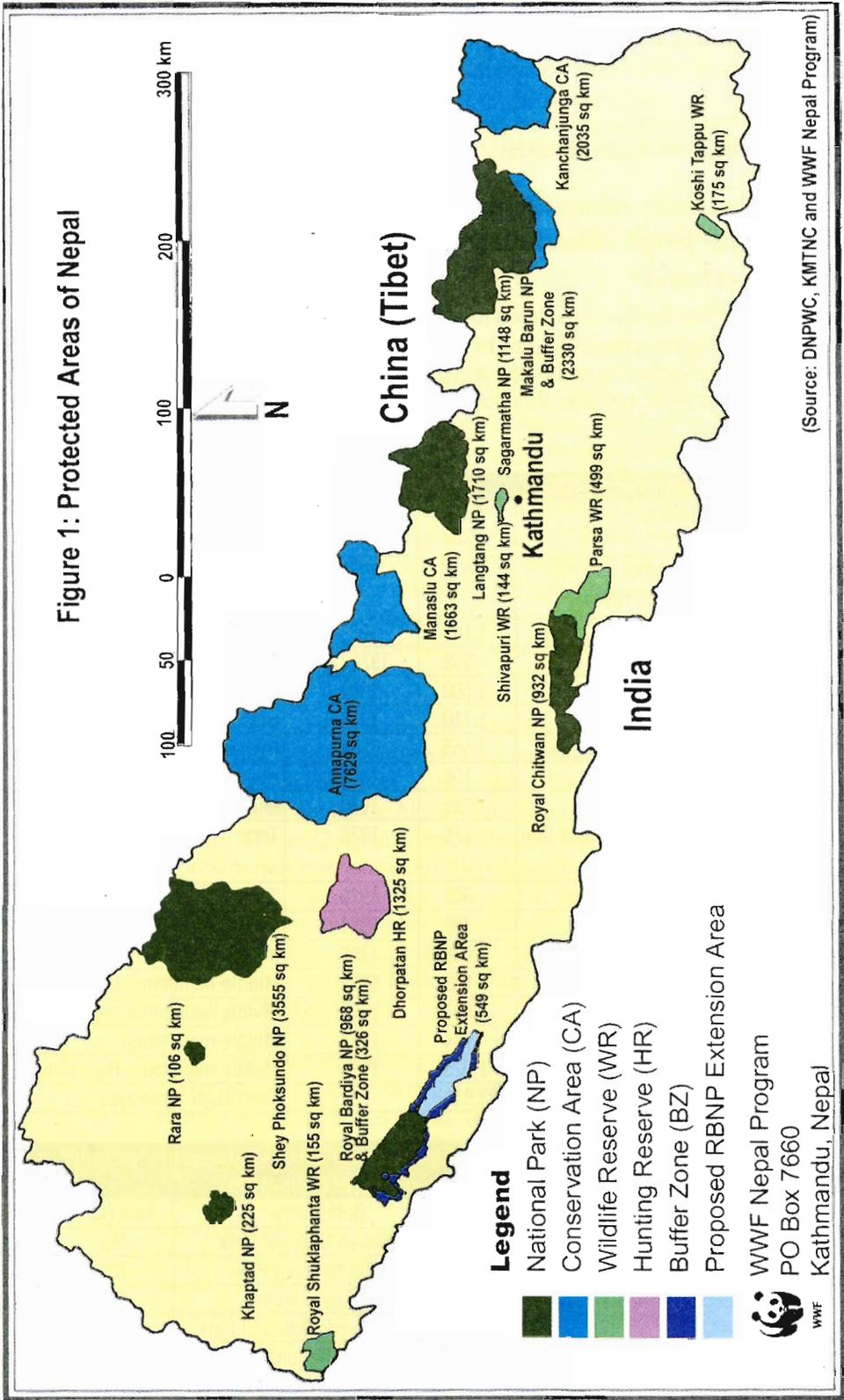
A brief overview of the development of legislation for conservation in Nepal is given below.

- Before 1973 the Department of Forests was responsible for nature conservation.
- In 1973 the National Parks and Wildlife Conservation Act was made.

**Table 4: Buffer zones established for protected areas of Nepal (1998/1999)**

Buffer zone	Area (km <sup>2</sup> )	Year
Royal Chitwan National Park	750	1997
Royal Bardia National Park	328	1997
Langtang National Park	420	1998
Shey Phoksundo National Park	449	1998
Makalu Barun National Park	830	1998
Total	2,777	

Figure 1: Protected Areas of Nepal



(Source: DNPWC, KMTNC and WWF Nepal Program)

The National Parks and Wildlife Conservation Division was created as a semi-autonomous branch of the Department of Forests.

- In 1982 the division was upgraded to a fully-fledged Department within the Ministry of Forests and Soil Conservation.
- Now there are 16 protected areas (8 national parks, 4 wildlife reserves, 3 conservation areas, and 1 hunting reserve) covering an area which is about 15% of the total area of the country.
- Initially, emphasis was on species' preservation but this has gradually shifted towards community-oriented conservation.
- In 1992 His Majesty's Government of Nepal (HMGN) introduced a policy of community development in buffer zones, legally mandating integrated conservation and development.
- In 1996, HMGN passed legislation to implement a policy under which 30-50% of park revenue will be spent on community development in the buffer zones.
- HMGN has implemented a policy of directing up to 40% of mountaineering fees to community development and environmental conservation in the alpine regions.
- Nepal has signed several international treaties concerning biodiversity and environment.
- Currently more than 100 non-government organisations are working within the context of nature conservation, but most of those are reliant on support from International non-government organisations.

## **Activities of other member countries of the Hindu Kush-Himalayan Ecoregion**

The other member countries of the HKH have also established national parks and natural reserves to protect landscapes, ecosystems, and endangered species. Bhutan is an example and Figure 2 shows the large proportion of territory that has been allocated to the National Protected Areas' System (Sherpa 1996).

Many on-going activities for environmental protection and natural resource conservation include activities for biodiversity conservation. China provides an example. There has been a ban on cutting down native forests in China and a reforestation project has begun in the upper reaches of three important rivers: the Yangtze River, the Yellow River, and the Lanciang River. An area of 220,000 sq.km in the source region of these three large rivers will be demarcated as a protected area for nature restoration.

### **Local People Are Key Stakeholders in Biodiversity Conservation**

Whilst local people enjoy the benefits of the rich biological resources, they also encounter difficulties including competition with wildlife for living space and resources. Examples of such conflicts are given below.

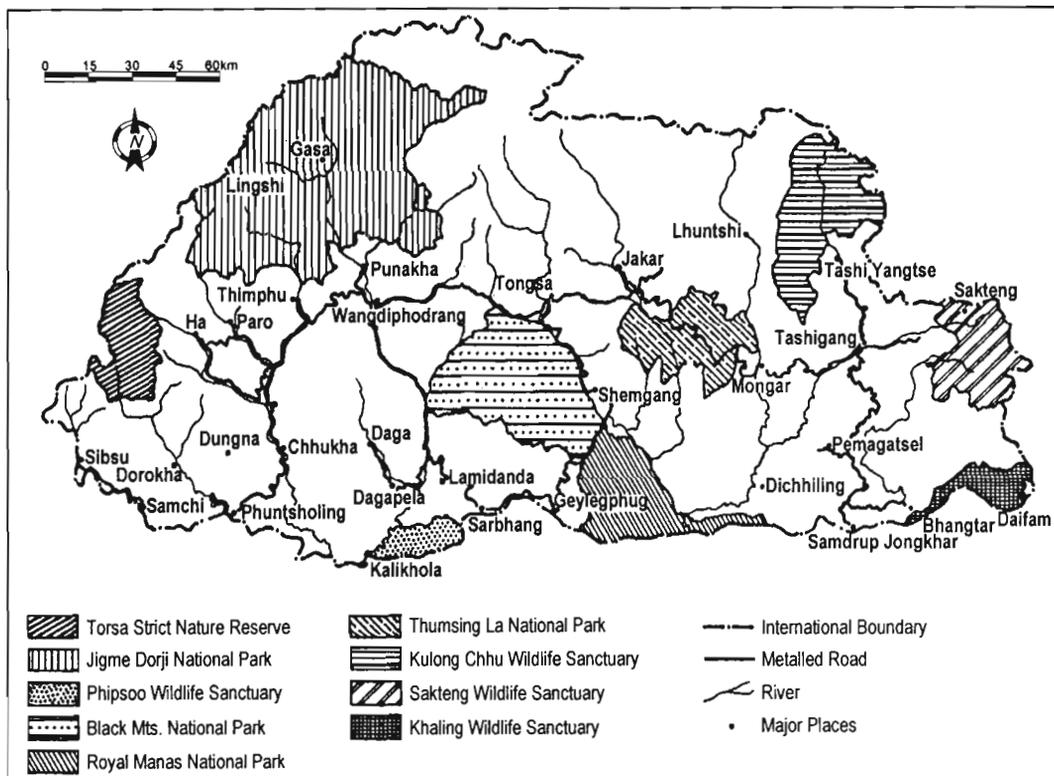
### **Human and animal deaths in protected areas of Nepal**

Some humans are killed by animals. Data from Nepal serve as an example. Table 5 shows the number of local residents killed in accidents with wild animals in different national parks and wildlife reserves in the fiscal year 1998-1999. Table 6 shows wildlife casualties for the same period.

### **Protection of the Tibetan Antelope**

To protect the endangered Tibetan antelope from the threats of poaching and illegal international trade, a court order in India has banned the manufacturing of soft wool derived

Figure 2: National protected areas' system of Bhutan



“chinese people have even lost their lives protecting the Tibetan antelope from poachers”

Table 5: Human casualties in protected areas of Nepal in the fiscal year 1998-1999

Protected area	Number of people	Cause of death
Royal Chitwan National Park	4	Killed by tiger
Royal Chitwan National Park	8	Killed by rhinoceros
Royal Suklaphanta Wildlife Reserve	2	Killed by wild elephant
Royal Suklaphanta Wildlife Reserve	1	Killed by rhinoceros
Royal Bardia National Park	2	Killed by tiger
Parsa Wildlife Reserve	2	Killed by wild elephant

Source: DNPWC (1999a)

from this animal. At the time of writing a newspaper reported that this had left 20,000 workers jobless in Kashmir. Some Chinese people have even lost their lives protecting the Tibetan antelope from poachers (Guangwei 2000).

### Protection of the wild ass

A recent survey in Maduo County of Qinghai (the upper reaches of the Yangtze River and Yellow River), China, shows that the wild ass population has reached 20,000. This has led to competition for forage between these animals and livestock (Guangwei 2000).

**Extraction of resources from Chitwan National Park, Nepal**

Due to the pressure of population growth there is an increasing demand for firewood and fodder. In the area around Chitwan, there are firewood and fodder deficits of about 47,947 tonnes and 26,913 tonnes respectively (King Mahendra Trust for Nature Conservation 1996). Each season, about 60,000 people enter Chitwan National Park to cut grass. Each entry permit costs NRs 5 (US \$0.12). This has resulted in high pressure on grassland, livestock depreciation, and crop raids by wild animals. This illustrates a conflict between conservation and development. Its resolution may lie with the management of participation by local people in biodiversity conservation.

**Table 6: Recorded wildlife casualties in protected areas of Nepal in the fiscal year 1998-1999**

Wildlife species	No. of animals	Cause of death
Rhinoceros	31	Natural death (10), fighting between rhinoceroses (6), poaching (4), killed by tiger (1), trapped in swamp (6), other (5)
Tiger	7	Natural death (2), shot by park staff (2), poisoning (1), not known (2)
Baby elephant	1	Natural death
Leopard	4	Natural death (2), not known (2)
Bear	2	Not known
Musk deer	2	Killed by wildlife
Swamp deer	1	Not known
Spotted deer	10	Different incidents
Barking deer	3	Not known
Sambar deer	2	Not known
Blue bull	1	Not known
Palmin civet or toddy cat	1	Not known

Source: DNPWC (1999a)

**Biosphere Reserves: A New Concept**

A new concept in nature reserve management and reconstruction suggests that biodiversity conservation and habitat protection must be integrated into human social and economic activity (Figure 3) and regional development planning under the guidance of sustainable development. The concept of 'nature reserves of the biosphere', proposed by the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Framework of Management and Reconstruction of Nature Reserves of the Biosphere (Sylvia), represents recent progress in this area. At the time of writing, there were 368 nature reserves of the biosphere identified in 91 countries. The key points of the framework are given below.

- It is linked with Agenda 21 and the Rio Convention of Biodiversity Conservation.
- Humans are considered as components of nature reserves.
- The framework should be integrated into regional development planning and policy.

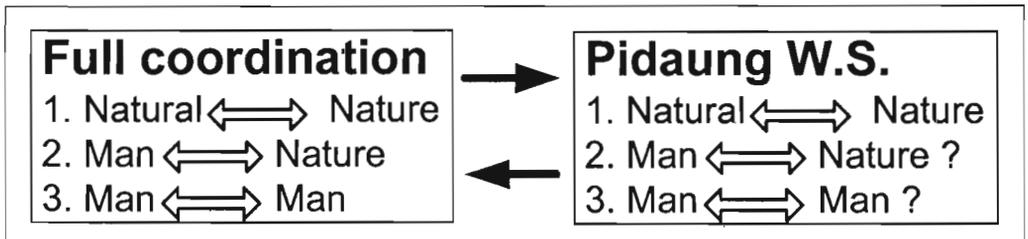


Figure 3: **Comparing the coordination function**

“all stakeholders should be invited to participate in management”

- Nature reserves should be established in regions where there is conflict between humans and the environment.
- The role of buffer zones should be emphasised and efforts made to enlarge buffer zones for the integrated management of the ecosystem as a whole.
- All stakeholders should be invited to participate in management and a partnership of management should be established.
- Public awareness should be promoted through information dissemination and environmental education.
- Open, participatory, and acceptable management should be practised.
- Related organisations, mechanisms, and policies necessary for nature reserves of biosphere need to be established (Nanyong 2000).

“public awareness should be promoted”

All these principles can be integrated with our experiences for improved management of nature reserves and national parks.

### **The example of China**

In China there were 2,600 nature reserves in 1999, comprising 172.8 million ha which is 18% of the total area of China. This network of nature reserves covers a wide variety of environments and has advanced facilities and an effective management system. Of these nature reserves, 15 have been identified to be included in the World Biosphere Conservation Network of UNESCO. A Biosphere Conservation Network of China has been established which has already incorporates 83 protected areas in China (Nanyong 2000).

“this network of nature reserves covers a wide variety of environments”

### **The Integrated Management of Pidaung Wildlife Sanctuary**

Pidaung Wildlife Sanctuary was initiated as a reserved forest of moist and dry deciduous forest in 1913 with an area of 724.42 sq.km and then became a game sanctuary in 1918. It was notified by the Ministry of Forestry under the Director of Nature and Wildlife Conservation, Forest Department in June 1996. It was formerly well known for large mammals such as rhinoceros, deer, bison, and wild elephant occurring in abundance. But Pidaung Wildlife Sanctuary has been suffering from all kinds of human destruction. Reassessment of its status has only recently been carried out as a result of the workshop ‘Preparing Model Management Plan for Pidaung Wildlife Sanctuary’, which took place in Myitkyina, Kachin State, Myanmar on 12-14 December 2000.

The workshop on ‘Preparing Model Management Plan for Pidaung Wildlife Sanctuary’ provides a useful example of planning a management strategy for a protected area. In formulating a plan, issues addressed include biodiversity conservation and conflicts between conservation and development. The objectives of the workshop and further information including recommendations for the management plan of Pidaung Wildlife Sanctuary are discussed in detail in the workshop report (Part III of this publication).

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A number of successful ventures provide useful examples for the development of a management plan for Pidaung Wildlife Sanctuary (see workshop report). A good example, the PPP of Nepal, is discussed below.

### **The Parks and People Project of Nepal (DNPWC 1999b)**

The Department of National Park and Wildlife Conservation (DNPWC) has been implementing the Parks and People Project (PPP) in seven protected areas of Nepal with the following primary objectives: (1) to ensure the socioeconomic well-being of the buffer-zone communities and (2) to undertake biodiversity conservation in parks and reserves and their surroundings (see Executive Summary, DNPWC 1999b).

In order to achieve the true participation of buffer-zone communities in this developmental endeavour, the programme recognises that in line with the government's approach of partnership for conservation, the buffer-zone communities must become more vociferous and active in pursuit of what they want and they must learn about what is available to them and of the ways and means to access it.

Hence, to realise its objectives, PPP, funded through the United Nations Development Programme (UNDP) since early 1995, has implemented various community-based biodiversity conservation activities through the active involvement of self-governed, local organisations in the seven protected areas of Nepal.

The major activities initiated by the programme in 1999 are the expansion and strengthening of local organisations such as user groups, imparting skill enhancement training, income generation, productive infrastructural development, conservation education and awareness, buffer-zone community forest development, and promotion of ecotourism. Various park management activities such as grassland, wetland, and habitat management have also been successfully carried out with the aim of conserving habitats and ecosystems.

This example and others give ideas and frames of reference but ultimately each nature reserve has to find its own suitable method of management. I firmly believe a better future for Pidaung Wildlife Sanctuary will be realised through the efforts of all its stakeholders.

### **Conclusions**

- Biodiversity is an important indicator of environmental status and its conservation is one of the key elements of sustainable development.
- Biodiversity conservation goes far beyond national boundaries and accommodates the interests of present and future generations.
- It is important to mobilise the initiative of all stakeholders for successful biodiversity conservation.
- The HKH ecoregion is an important key node for biodiversity conservation on a global level. At present protecting the ecosystems as a whole may be the best solution due to the lack of data. Any project related to biodiversity must work closely with the local people, the key stakeholders, and much attention should be attached to local-level activities.
- The management strategy for Pidaung Wildlife Sanctuary can provide valuable experiences for the improvement of management of some kinds of nature reserves. It will also ensure that Pidaung Wildlife Sanctuary fulfils its nature-conservation role.
- ICIMOD, as a well-known international organisation focusing on sustainable mountain development of the HKH ecoregion, is well positioned to fulfil the role of regional coordinator.

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