Participatory Biodiversity Conservation in the Hindu Kush-Himalayan Ecoregion

– Towards Participatory Conservation and Development

An Urgent Task

This project focuses on the eastern Himalayan eco-region, one of the high-priority regions of the 200 global ecoregions as defined by the Worldwide Fund for Nature (WWF). The eastern Himalayas cover the border region of south-west China, the east of India, and northern Myanmar, specifically south-eastern Tibet and north-western Yunnan (China), eastern Assam (India), and northern Myitkyina (Myanmar). This area is situated in the tropical and subtropical mountain zones with altitudes ranging from a few hundred metres above sea level to snow-glacial peaks towering above eight thousand metres. Accessibility in this region is generally difficult. With a lack of infrastructural facilities and difficulties with communication, most local people maintain subsistence livelihoods, relying on slash-burn agriculture, herding, and hunting.

The region is rich in biodiversity in terms of both flora and fauna. Many rare and endemic species inhabit this region, including relic species from the glacial period. However, with the invasion of commercialisation and globalisation, along with increased population pressure, its biodiversity is at risk. Therefore, an urgent need exists to draw international attention to and increase local awareness of the protection of the flora and fauna in order to maintain the structure and function of the ecosystem.

The region is also characterised by diverse mountain cultures. A number of minority groups lives here, for example Tibetans, Menbas, Lobans, Lisus, Drowns, and Kechins.

The global context of sustainable development of the Hindu Kush-Himalayan (HKH) Ecoregion must also be considered. There are increasing flows and exchanges of economy, culture, people, and information between the HKH and the outside world. The great wealth of biodiversity in the Himalayas is due to the wide variety displayed by its mountain environment, which has an extreme biodiversity in ecosystems, species, and genetics. The species' diversity in the Himalayas represents different floristic elements from paleoarctic and Mediterranean to Indo-Malaysian and east Asian flora. The wide diversity of fauna in the region is as rich as that of the plants. For instance, the giant panda, golden monkey, sika deer, takin, red panda, lynx, musk deer, and gibbon are endemic to the region. New research has suggested areas of interest in the Qinghai-Tibetan Plateau. New research has led to the consideration of a large part of the plateau in the region as a Trans Himalayan zone and an area unique in many respects.

In the instruments adopted at the Rio Summit, mountains are defined in Chapter 13 of Agenda 21, as 'important resources of biological diversity', and 'storehouses of biological diversity and endangered species'. Mountain biodiversity has multiple dimensions and is fragile. Global recognition of the alarming loss of biodiversity and recognition of the value of biodiversity resulted in the 'Convention on Biological Diversity', signed at the 1992 Earth Summit in Rio de

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Janeiro, Brazil. The convention places immense importance on biological diversity and the need to preserve it for future generations. Conservation of biodiversity in the HKH is a very important component of the worldwide effort. The International Centre for Integrated Mountain Development (ICIMOD) plays an important role in biodiversity conservation through promoting the conservation of nature reserves, the study of indigenous knowledge and ethnobotany, encouraging the participation of local people in natural resource management, and transboundary cooperation in conservation. ICIMOD's activities are now focused at grass-roots' level and incorporate regional collaboration for conservation, poverty alleviation, and development through training workshops and technology transfer; this project was designed to address these issues.

Background and Importance of Biodiversity in the Hindu Kush-Himalayan Ecoregion

General

The HKH Ecoregion covers the HKH mountain system and the Qinghai-Tibetan Plateau. This region is one of the largest mountain systems in the world, and the Qinghai-Tibetan Plateau is recognised as the third polar region of the world. Geographically, the HKH covers all or part of the following countries: Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan (see Table 1). The mission of ICIMOD is to help promote the development of an economically and environmentally sound mountain ecosystem and to improve the living standards of mountain populations in the HKH. The mountains are a vast storehouse of hydropower, timber, fuelwood, medicinal plants, minerals, and water. The most important fact is that they are rich in terms of their ethnic

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Table 1: Areas and Populations of the Hindu Kush-Himalayan Region

Country	Inclusions	Area (sq.km)*	Population in 1997 (apprx. millions)	Density per km²
Afghanistan	25 out of 30 provinces	390,475	15.54	40
Bangladesh	Chittagong Hill tracts	13,295	1.14	86
Bhutan	Entire territory	46,500	0.71	15
China	All of Tibet and Qinghai and parts of Yunnan and Sichuan	2,420,266	30.45	13
India	All of 8 and parts of 3 northern states	461,139	41.16	89
Myanmar	All districts in the 4 states of Kachin, Chin, Shan, and Rakhine	317,629	10.10	32
Nepal	Entire territory	147,181	21.66	147
Pakistan	North West Frontier Province, federally administered tribal areas, northern areas, Azad Jammu and Kashmir, and 12 districts of Balochistan	489,988	31.13	63
	ICIMOD Ecoregion	Total 4,286,473	Total 151.89	61

*As an ecoregion, the area does not imply any judgement on the legal status of any territory or endorsement or acceptance of such boundaries.

diversity — there are over 1,000 tribes in the region, each with their own unique cultural heritage, language, and indigenous knowledge.

Extending over 3,500 km, the HKH Ecoregion is host to the world's highest ecosystems and a variety of environments. These mountain environments are extremely rich in biodiversity because of the varied altitude, climatic conditions, geological-biophysical conditions, and soil formations. Historically, human interactions with the mountain environments have further enriched their biodiversity, in particular with respect to the distribution patterns of plants, animals, and genetic diversity. For example, many medicinal materials can be found in the higher mountains, and these provide actual and potential benefits. The provinces of Sichuan and Yunnan in China have long been known as production bases for medicinal plants and Tibetan medicine has been developed based on the these special plant and animal resources. The botanical wealth of the Indian Himalayas and Nepal consists of more than 8,000 species belonging to 200 families and about 30% of the Himalayan flora are endemic. Nine thousand plant species have been reported in the virgin forests of the eastern Himalayas, of which nearly 3,500 or 39% are endemic to the region. The total number of species of plants in the HKH Ecoregion is estimated to be as high as 25,000 or 10% of the world's flora. Table 2 from Pei Shengji (1996) illustrates plant species' diversity in the region.

Table 2: Plant Diversity in the Hindu Kush-Himalayan Region

Country	Geographical areas (km²)	Number of species of flowering plants and ferns
Afghanistan	652,090	4,500
Bangladesh	144,000	7,400
Bhutan	46,500	5,000
China	9,596,960	29,700
India	2,387,590	17,000
Myanmar	676,577	7,766
Nepal	147,181	5,568
Pakistan	796,095	6,000

Source: Pei Shengji (ed.) (1996) *Banking on Biodiversity*, report of the Regional Consultation on Biodiversity Assessment in the HKH. Kathmandu: ICIMOD.

The Global Convention on Biodiversity (1992) called on participating nations to cooperate and undertake measures to promote the conservation of biodiversity in order to ensure the sustainable use of its components and a fair and equitable distribution of the benefits occurring from the use of its resources. Biodiversity conservation is given high priority by the HKH regional member countries. Many areas have been demarcated as protected areas, and innovative participatory approaches to development and conservation are being implemented. However, the challenges are immense; conserving the natural and cultural heritage and, at the same time, improving livelihoods require continued commitment and increased efforts as well as regional collaboration.

Biodiversity – Sustainable Development Indicators

As explained previously, the HKH Region represents one of the world's richest ecosystems. The flora and fauna of the countries in the region have been greatly influenced by the presence of the Himalayas. The eastern Himalayan range has been relatively stable physically and climatically since the Quaternary epoch and many primitive and relict species have been found in the region. Mountain wildlands, in general, are considered a great refuge for endemic and endangered species and communities (Mountain Agenda 1992).

The HKH Region contains a wide variety of landscape vegetation types and microclimates. Within these, species have evolved and different gene types have been created. Human protection, selection, and domestication of both native and exotic plants and animals have also resulted in an enormous genetic diversity. It is believed that rice strains in this region originated

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from several wild species of *Oryza* in the Eastern Himalayas. Many of the wild relatives of crop plants in this region are now threatened or endangered. Animal species, such as honeybees, silkworms, shell-lac insects, wild yak, wild donkey, and antelope are also threatened due to changes in habitat and environment.

Biodiversity: the Substantial Resources of Mountain People

Biological diversity is the most important natural resource base for the human population in this region. It is the basis of their survival. Thousands of species of plants and animals supported the development of early societies, providing the basis for the evolution from hunting and gathering to agriculture, animal husbandry, forestry, and industry. These early societies concentrated on the development of both wet and dry rice cultivation; tea plantation; domestication of barley, buckwheat, yak and many other species in the region; and the use of thousands of wild species to meet their basic needs. Because 90% of the region's population are engaged in agriculture, animal husbandry, and forest-related activities, continuing use and maintenance of biological diversity and providing a foundation for long-term sustainable development are particularly important to the people of the HKH Region. Development of the mountain economy in these regions will depend on sustainable use of biological resources, maintaining a rich diversity of mountain crops in farming systems, management of pastures, fodder trees in diverse mountain ecosystems, and development of medicinal plants and animals, edible mushrooms, ornamental plants, and beekeeping.

Biological resources also have important ecosystem functions such as watershed protection, reduction of natural disasters, climate regulation, photosynthesis, and crop pollination. Such resources also provide genetic capital for new varieties of medicines and industrial innovations. The potential of biodiversity and genetic resources in the HKH Region are extensive. The diverse mountain ecosystems provide broad opportunities for people to develop their unique landscape-ecosystems for agriculture, forestry, animal husbandry, rural industry, and ecotourism.

Loss of Biodiversity

Generally speaking, the whole environment and its biological resources in the HKH Region are undergoing drastic impoverishment as a result of human action. Deforestation and habitat alteration cause highly diverse natural ecosystems to become far less diverse, often monocultural agroecosystems have resulted in the extensive reduction of biological species in the region. Overexploitation of biological resources, stimulated by inappropriate economic policies and faulty institutions, insufficiently protected areas, poaching, poor law enforcement, local encroachment, and illegal trade are the main problems for the natural conservation of biodiversity. Special attention should be given to the eastern Himalayan region as it was recognised as one of the 10 richest areas for biodiversity listed in the world's threatened Biotas, 'Hot Spots' (Myers 1988).

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The Role of the International Centre for Integrated Mountain Development: Regional Collaboration in Conservation of Mountain Ecosystems

Biodiversity Conservation of the Regional Collaborative Programme for the Tibet Autonomous Region-II

The mandate of ICIMOD, as stated, includes the following statement: "to help promote the development of economically and environmentally sound mountain ecosystems ... " Environmentally sound mountain ecosystems can mean many things, ranging from the state of mountain resources, flora, and fauna to different biophysical and socioeconomic processes taking place in mountain areas. In view of the fact that most mountain households directly depend on renewable natural resources for their day-to-day survival and that these are fast deteriorating, ways and means to improve the conditions of these natural resources are an important priority for most mountain communities. There are two high-priority areas: one focuses on people and resource dynamics in mountain watersheds and the other on the governance and management of common property resources. Public participation, including community-based management and gender issues, is emphasised. The goal of the project is to review and assess the state of biodiversity, identify appropriate biodiversity management techniques, promote participatory action-research programmes, and undertake capacity building of local institutions — including training and the development of a framework for assessing and monitoring change.

Objectives

The long-term goal of the current programme is to ensure conservation of biological diversity in the mountain ecosystems of the HKH and to enable the governments of the participating countries to develop policies on and programmes for the conservation of biodiversity in the HKH. For this purpose, policy-makers and decision-makers will be provided with options for biodiversity conservation in these mountains; and these will include those in which local people will be recognised as the custodians and managers of biodiversity.

Outputs

The outputs will be

- a comprehensive database for each bio-geographic region (BGR),
- options for sustainable management of biodiversity for each BGR,
- protected area system plans for each BGR,
- policy recommendations to be communicated to government decision-makers and non-government organisations (NGOs),
- increased awareness of different stakeholders through information exchange and networking among participating countries, and
- increased regional cooperation.

Components

- Review of the status of biodiversity in the HKH by major BGRs and farming systems
- Review and assessment of the present system, the location of protected areas in the region, and the extent to which the major BGRs are represented in these protected areas
- Identification of different management options (local and central) for biodiversity conservation within and outside protected areas and preparation of biodiversity conservation and management guidelines for each of the major BGRs

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- Development of mechanisms for regional collaboration in biodiversity conservation in the HKH

Activities Carried Out

Workshops

A workshop on the 'Promotion [of] and Regional Collaboration on Biodiversity Conservation and Management in the Eastern Himalayas' was organised from 12-15 March 1998, in Kunming, China. Country project team members from China, Myanmar, and Nepal participated in reviewing project implementation and progress made from 1995-1997 and plans for the new phase (1998-2000). An international workshop on 'Subregional Consultation on Conservation of Hkakaborazi Mountain Ecosystems in [the] Eastern Himalayas' was held in Putao, North Myanmar, from 25-29 October 1999.

Training

"mechanisms for regional collaboration in biodiversity conservation in the HKH"

A training course-cum-workshop on bamboo was organised jointly by the International Plant Genetic Resource Institute (IPGRI), ICIMOD, and the International Network for Bamboo and Rattan (INBAR) in collaboration with the Kunming Institute of Botany of the Chinese Academy of Sciences and Southwest Forest College in Yunnan, China from 10-17 May 1998. There were 25 participants from 13 countries in Asia; five of which were Himalayan countries. Training workshops on transboundary biodiversity conservation and ecotourism, both held in 1998 and 1999, were organised jointly by ICIMOD, The Mountain Institute (TMI) , the Department of National Parks and Wildlife Conservation, Nepal (DNPWC), and the Qomolangma Nature Reserve (QNS), Tibet, China. The workshops were held in Kathmandu and a field trip to Langtang National Park in Nepal took place. A training workshop on 'Preparing [a] Model Management Plan for Pidaung Wildelife Sanctuary' jointly sponsored by the Forest Department, Ministry of Forestry, Myanmar, and ICIMOD was held in Myitkyina, Kachin State, Myanmar from 12-14 December 2000.

Case studies

"relying on traditional medicine for health care"

A case study reveals that, like other villages in the conservation area area, the Natkanle villagers are still relying on traditional medicine for health care. Secondly, more than 40 medicinal plants from mountain forests are being used in the local herbal medicine systems. Thirdly, village monasteries are regarded as sanctuaries and all plants and wildlife species are protected, including medicinal plants; they are all highly valued. This case study was carried out from October 1997 to March 1998. A final report on the case study was received in May 1998. A project supported by World Wildelife Fund (WWF) entitled 'Biodiversity Assessment and Conservation Planning for Eastern Arunachal Pradesh, India' was completed in 1999, in which geographic information systems (GIS) and remote sensing (RS) were applied for land-use and land-cover mapping and gap analysis of nature reserves. A project on 'Biodiversity Collaboration and Integrated Management of Mountain Ecosystems in

Hongqiang, Chuxiong, Yunnan Province of China' was completed in December 2000. 'Transboundary Cooperation for Conservation between Nepal and the Tibet Autonomous Region' is an on-going activity in which ICIMOD's expertise in the form of consulting services, seminars, and lectures is an important resource.

The Role and Future Activities of the International Centre for Integrated Mountain Development in Biodiversity Conservation

The International Centre for Integrated Mountain Development is known to the region and will play the important role of regional coordinator, having the ability to call all member countries to work together. Institutions and universities of donor countries will be invited. Partner institutions, local governments, and grass-root communities of member countries are the key members of the project.

A diverse set of APPROACHES AND TOOLS for participatory conservation will be applied, including

- community-based activity for participatory conservation of biodiversity;
- buffer-zone establishment and land-use planning;
- technology transfer to reduce human pressure on natural resources, including agroforestry, soil conservation, rural energy, biogas, and drinking water programmes, water harvesting, and the introduction of new crops and forage materials;
- equity and gender issues and empowerment of grass roots' women and organisational development;
- poverty reduction and the introduction of cash crops, beekeeping, ecotourism, and rural industry;
- transboundary cooperation and measures for preventing illegal poaching and illegal transboundary trading in wildlife;
- grass-roots' NGOs; and
- GIS and RS application and establishing a database of nature reserves.

It is emphasised that biodiversity must be integrated into regional development planning, vis-à-vis biodiversity conservation, and must consider the needs of regional development which are closely linked to poverty alleviation and income generation.