

1 Introduction

The Himalayan mountain ranges are one of the greatest physical features on earth. They extend across eight Asian countries (Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan) and have an east-west length of 2,500 km and a north-south width of 250-300 km. This huge landmass covers an area of 3.4 million sq. km. and the area has a population of 118 million with population densities varying from 20 (Myanmar) to 126 (Nepal) people per sq. km. The management of this vast tract of land directly affects the population and the stability of the social fibre in the Hindu Kush-Himalayan countries.

The National Forest Policy of India of 1988 stipulates that forest cover should be maintained

over two-thirds of the area in hill regions in order to prevent erosion and land degradation and to ensure the stability of the fragile ecosystem. At present, the average forest cover in the hill areas of the country is only 36.8 per cent, far below the intended goal of the Policy. Of the 95 hill districts in the country, only 30 have more than 66 per cent forest cover.

This vast chain of mountain systems with complex topography is endowed with abundant natural resources. Towering snow-clad mountain peaks, mighty glaciers, and voluminous ice-streams feed large river systems, and the area has innumerable species of flora and fauna, as well as a rich human culture and heritage.

Table 1.1: Area and Population of the Himalayas

Country	Inclusion	Area (sq. km.)	Approximate Population in Millions	Population Density
Afghanistan	25 of 30 provinces	390,475	13.8	35
Bangladesh	Chittagong Hill Tracts	13,189	1.2	78
Bhutan	Entire territory	46,500	1.4	26
China	All of Xizang and parts of Yunnan and Sichuan provinces	1,647,725	19.6	12
India	8 NE states and parts of 3 northern states	482,920	35.0	73
Myanmar	Cochin, Chin, and Shan states	280,862	5.8	20
Nepal	Entire territory	147,181	18.5	126
Pakistan	NWFP, FATA, 12 districts of Balochistan	404,195	22.7	56
Total		3,413,047	118.0	34

The people of the Himalayan region have a close relationship with the forests, their entire life is interwoven with the forest eco-systems. The famous Chipko ('tree-hugging') movement led by women, which started in the Garhwal Himalayas in the 1970s, heralded an environmental conservation movement not only in India but also the world over. The protection of forests and trees is an integral part of the religious practices of the mountain people. The worship of peepal, neem, and bel trees is testimony to people's link with nature.

The Himalayan forests comprise a vast range of forest types from moist savannah at altitudes of 300m (in the *Terai*) to alpine pastures at altitudes of 6,000m, and they have a unique biodiversity. Table 1.2 shows the major forest types in the various Himalayan states in India.

Issues of development and their related environmental problems have confronted this region on a significant scale in the past. A number of development activities had to be halted as a result of threats to the environment, and this restricted employment opportunities for mountain inhabitants, reduced development,

and created many socioeconomic problems. Furthermore, the inherent high costs limited infrastructural development in the hills. As a result of the lack of awareness in these regions, commercial interests were emphasised and unsustainable exploitation of the resources continued. The development of infrastructure, particularly roads, posed further challenges for planners. Lack of research into the specific needs of mountain areas meant that technologies appropriate for other areas were used, compounding the problems many-fold. The dependence on forests for household energy continued unabated, and the lack of diversification in developmental activities and the constraints of a land-based economy restricted development options considerably. The lack of awareness of the role of, and approaches to, gender further complicated the problem of development.

The Himalayan region had an economy primarily based on the primary sector. As a result of constraints related to access and terrain, mountain inhabitants practised subsistence farming and the economic condition of households barely reached subsistence level.

Table 1.2: The Forests of the Himalayas

State	Total Watersheds	Important Forest Types
Assam	130	Tropical Wet Evergreen, Montane Wet Temperate, Sub-Tropical Pine
Arunachal Pradesh	83	Sub-Tropical Pine, Sub-Alpine and Alpine, Montane Wet Temperate
Himachal Pradesh	77	Sub-Tropical Pine, Himalayan Dry Temperate, Sub-Alpine, and Alpine
Jammu & Kashmir	203	Himalayan Dry Temperate, Sub-Himalayan Moist Temperate
Manipur	40	Sub-Tropical Moist Deciduous, Montane Wet Temperate
Meghalaya	11	Sub-Tropical Pine, Tropical Wet Evergreen, Montane Wet Temperate
Mizoram	38	Tropical Moist Deciduous, Montane Wet Temperate
Nagaland	9	Tropical Wet Evergreen
Sikkim	8	Sub-Alpine & Alpine, Montane Wet Temperate
Tripura	1	Tropical Moist Deciduous
Uttar Pradesh	41	Sub-Alpine & Alpine Himalayan Moist Temperate, Sub-Tropical Pine, Tropical Dry Deciduous, Tropical Moist Deciduous
West Bengal	3	Montane Wet Temperate

Table 1.3: Area, Population and Forest Cover of the Indian Himalayan States

State	Geographic Area of Hill Districts	Population (in millions)	Population Density	Forest cover in Hill Districts	Forest Cover (%)
Arunachal Pradesh	83,743	0.86	10	68,602	81.9
Assam	15,222	0.46	30		
Himachal Pradesh	55,673	5.11	92	12,521	22.5
Jammu & Kashmir	222,235	7.72	35	20,440	9.2
Karnataka	40588			23,040	56.8
Kerala	31,745			9,366	29.5
Maharashtra	62,757			9,970	15.9
Manipur	22,327	1.83	82	179418	78.0
Meghalaya	22,429	1.76	79	15,657	69.8
Mizoram	21,081	0.69	33	18,775	89.1
Nagaland	16,579	1.22	73	14,221	5.8
Sikkim	7,096	0.40	57	3,129	44.1
Tamil Nadu	24,326			5,483	22.5
Tripura	10,486	2.74	262	5,546	52.9
Uttar Pradesh	51,125	5.87	115	22,658	44.3
West Bengal	3,149			1,455	46.2
Total	675,339			248,281	36.8

Many men migrated to the neighbouring plain areas in search of employment to augment household income. This imposed a further heavy burden on women. In 1993, the Indian Council of Forestry Research and Education (ICFRE), assisted by the International Development Research Centre (IDRC), started a project on eco-rehabilitation in the Himalayas, in an attempt to overcome the socioeconomic limitations of the region and work towards sustainable development. The main objectives of the project are the restoration and development of degraded lands with the participation of local communities, and using field-tested, economically sound, environmentally adaptable, and socially viable technologies for the all-round development of land-based resources. The project has been in operation for three years and is dealing with a number of important and highly relevant issues. The major focus is on assessment of the extent of degradation using GIS techniques, reviewing policies related to the extent and type of land use and related issues in participating countries, and the preparation of socioeconomic profiles of study sites. Socioeconomically viable and tested technology packages are being used for

rehabilitation of areas affected by mining. The project is mainly working at sites in the northeastern states and western Himalayan region of India. Local communities have shown considerable interest in the outcome of this technology transfer, and the methodology is being followed successfully in other places. The main activities are as follow.

- Assessment and quantification of damage resulting from shifting cultivation, mining, and other commonly practised systems of land use, using GIS techniques
- Identification and testing of appropriate interventions to contain shifting cultivation
- Rehabilitation of areas affected by mining
- Baseline and socioeconomic impact studies
- Review of national and regional land-use policy with particular reference to the rehabilitation of the Himalayas
- Assessment of the impact of devolution of authority from the state to local community levels using case studies and rapid rural appraisal methods
- Identifying the comparative advantage of different organisational structures using comparative advantage analysis techniques

- Developing policy guidelines on appropriate institutional mechanisms through group discussions using PRA techniques and institutional analysis methods