

Resource Information Database of the Indian Himalaya

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FOREWORD

Efficient management of the finite natural resources of the mountains is the key to sustainable and equitable development. This is particularly important for the Himalaya, which is the youngest and most fragile mountain ecosystem in the world.

In the complex mountain environment of the Indian Himalayan region (IHR), which continues to remain backward in terms of economic and infrastructure development, availability of accurate and authentic data in a suitable format is pivotal for effective development planning and decision making. The present volume on Resource Information Database is the third in the series of theme based/occasional publication of the ENVIS Centre on Himalayan ecology of the Institute (GBPIHED). This resource database is the outcome of efforts of the colleagues associated with the Environmental Information System (ENVIS) Centre who have made use of the existing Geographical Information System (GIS) facilities at the Institute and available secondary databases on natural resource, human resource, infrastructure and socio-economic aspects, etc., and integrated them with maps based on the Survey of India. It is hoped that the database will provide a basis for assessing the resources of the IHR and the complex interactions between these finite resources and the people inhabiting in the region. Availability of such databases will also substantially assist policy planners as well as administrators in the planning and developmental processes particularly for the effective management of the natural resources of the Indian Himalayan region.

We welcome critique of our esteemed readers.

Kosi-Katarmal (Almora)
December 2006.

Uppeandra Dhar
Director

PREFACE

Development objectives reflect planning process, which consistently emphasized the necessity of promoting policies and programmes of economic growth and social welfare. The economic development of a country or region is generally expressed in terms of the growth of its income. The value of the final product excluding the value of inputs used in the process of production is termed as the Gross National Product (GNP). However, these indicators of economic development do not take into account the use and depreciation of the renewable or non-renewable natural resources. As environment being a multi-disciplinary subject involving complex themes like biodiversity, atmosphere, water, land, soil, human settlements, human activities and many others, it is quite difficult to collect, analyze and study relationships among these various components. Hence, there is an urgent need to develop an environmental-economic accounting system to maintain natural resource accounts in totality. Management of natural resources is in the frontline of the struggle for more sustainable and equitable development and environmental degradation is one of the indicators of unsustainable social and economic systems. The information resources management has direct consequences on the quality and quantity of natural resources of any region. The main objective of the information resources management is to promote the understanding, development and practice of managing information resources as key enterprise assets.

The urgent need for today is to utilize our natural resources in a sustainable manner with a focus on minimizing their depletion and pollution. Moreover, the welfare of human society and the quality of life is directly linked to the sustainable use of the natural resources. Agenda 21 (Chapter 13) states that the mountain ecosystems and environments are of crucial importance by virtue of being rich unique centres of the biological and cultural diversity. Mountains cover about 24% of earth's landscape and home to at least 10% of world's population. They represent as much as 28% of world's forest areas sheltering about half of the world's biodiversity hotspots. Apart from harbouring rich biodiversity, the mountains are important source of fresh water, energy, crop diversity, etc. Furthermore, they are a source of key resources such as minerals, forest products, agricultural products and of recreation. The mountains are also melting points of cultures and home of indigenous communities and, therefore, are rich centres of cultural and spiritual significance. As a major ecosystem representing the complex and interrelated ecology of our planet, mountains and their environment are essential to the survival of the global ecosystem. The mountain ecosystems, simultaneously, are unique in geomorphology, vulnerable, fragile and react sensitively to population pressure and global climate change, therefore, are rapidly changing.

The mountain ecosystems are susceptible to accelerated soil erosion, landslides and rapid loss of habitat and genetic diversity. On the human side, there is widespread poverty among mountain inhabitants and loss of indigenous knowledge. In many mountain regions, there is vertical gradient to poverty as about 80% of the people who live there are impoverished. As a result, most of the global mountain areas are experiencing environmental degradation.

Hence, proper management of mountain resources and socio-economic development of the people deserves immediate attention.

With the increasing realization that the natural resources of mountain areas are vital for the upland as well as lowland people, the global agenda for sustainable development has brought

mountains to the sharp focus. Considering the importance of mountains in the global ecosystem, the present volume is an attempt to map the resources of the Indian Himalayan region (IHR). The information technology (IT) applications play a vital role in mapping resources in the form of databases, statistical tables, Geographical Information System (GIS) maps, which are combined in this effort into an information resource module of the IHR. This information module is based on (or derived from) secondary data, collected and compiled from different gazettes, bulletins, databases, government/official websites, and publications obtained from the various libraries and departments of the central and state governments.

The present monograph 'Resource information database of the Indian Himalaya' is divided into five sections. The first section is the introduction of the region, its spread, physical/geographical/physiographical features along with its vulnerability and proneness to the disasters. The second section discusses the profiles of the Indian Himalayan states including physiography, economy, infrastructure and level of development. The third section contains natural resource data tables of all the regions/states of the IHR, which include protected areas, wastelands, degraded lands, forest cover, landuse pattern, minerals, energy, economy and infrastructure, human resource, etc. The fourth section includes the major developmental indicators such as human development index and socio-economic indicators, which depict the disparities within the region. State level data have also been presented in sections three and four for comparison among states/regions. However, some district level maps of demographic data based on Census 2001 are also included. The maps are based on the Survey of India (SoI) maps at 1:7 million scale for visualizing the entire region in one frame. On the IT part, Arc Info/Arc View (GIS software) of ESRI, USA has been used to prepare maps and windows based application software for analyzing quantitative data. The fifth section, i.e. conclusion, describes the usefulness of the monograph and its potential applications. The present information resource module neither expresses comments on any developmental plans nor does it explain the reasons of uneven distribution of resources in the region. It simply presents a sketch of available resources in the region at one place in a readily available module, which could be easily accessed (also through internet) by all the stakeholders of the IHR for their own judgment and assessment.

ACKNOWLEDGEMENTS

Our ideas in writing this monograph have been shaped by several stakeholders and scientists who are either working in the mountains or concerned for the sustainable development of the mountains. Each interaction enriched our experience and added a new dimension to understanding the status of the Indian Himalayan region. It is very difficult to acknowledge every person. First and foremost, we thankfully acknowledge the unrelenting support of Dr. Upendra Dhar, Director of the Institute (GBPIHED), which we got from the beginning to the final compilation of this publication. The encouragement given by Dr. D. Bandyopadhyay, Director of the Ministry of Environment and Forests, Govt. of India, particularly for various activities of the ENVIS Centre at the Institute, is thankfully acknowledged. We also express our gratitude to Prof. A.R. Nautiyal, Director of High Altitude Plant Physiology Research Centre, Srinagar (Garhwal); Dr. K.G. Prasad, Ex. Director of Rain Forest Research Institute, Jorhat; and, Dr. Ramesh Chandra, Deputy Director of Anthropological Survey of India, Dehradun, for reviewing the draft of the monograph and providing valuable suggestions, which contributed a lot in improving the quality of the monograph.

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Authors

EXECUTIVE SUMMARY

The Himalaya is the youngest mountain chain on the planet and is believed to be still evolving, and thereby, is not having stabilized from geological and geomorphological considerations. The Indian Himalaya; with a breadth of 250-300km and stretch of over 2500 km from Jammu and Kashmir in the west to Arunachal Pradesh in the east; covers an area of about 5,33,604 km², which is inhabited by 3,96,28,311 people. This region represents 16.2% of the total area and 3.86% of the total population of the Indian Republic and is of crucial importance by virtue of being rich and unique centres of cultural and biological diversity. Due to uniqueness of the Indian Himalayan region (IHR), top priority in restoring its ecological health has been accorded by the Government of India. Since information on different aspects of the IHR is diffused and not available at a single place in a user friendly format it was desired to collect and collate all the available information, relating to all the 12 states (fully/partially) of the region, at a single place for utilization by various stakeholders of the region in particular and regional planners/administrators in broader perspective. Keeping the above in mind, this monograph entitled 'Resource information database of the Indian Himalaya' is prepared and therefore is an attempt to map the resources of the Indian Himalayan region (IHR) in a form of an information resource module. This monograph is based on secondary data, which were collected and compiled from different gazettes, bulletins, databases, government/official websites, and publications obtained from various libraries and departments of the central and state governments. The monograph neither expresses comments on any developmental plans nor does it explain the reasons of uneven distribution of resources in the region. It simply presents a sketch of available resources in the region at one place in a readily available module, which can be easily accessed (also through internet) by all the stakeholders of the IHR for their own judgment and assessment.

The monograph is divided into five sections viz, introduction, profile of the Indian Himalayan states, resource database, developmental indicators, and conclusion. The introduction section refers to physical and biological aspects including land and water resources as well as rich biodiversity of the IHR. Introduction to the region, its spread, geographical/ physiographical features along with its vulnerability and proneness to the disasters, agro-climatic zonations, forest types, etc., are also discussed in this section. Tabular data on major peaks and lakes in the IHR, major glaciers, seismic zonation, diversity of medicinal plants (including rare and endangered medicinal plants recorded in the RDB of the Indian plants), major land use distribution patterns, principal glacial-fed river systems, and state wise water resources are also included in this section. In the second section, the administrative profile of all the Himalayan states including existing infrastructural facilities available at individual state/administrative region and level of development have been described. The third section contains natural resource data tables of all the regions/states of the IHR and presents the extract of information from the resource database, which includes land use pattern, protected areas, wasteland, forest cover, minerals, energy, infrastructures, economy and human resources. To depict the resource distribution pattern, some graphical representations along with GIS maps have also been presented in this section. The graphical representation also presents the classified data and number of data points satisfying each class and percentage contribution of the class to the total sampled population.

Both the closed-ended and open-ended boundaries have been used in classifying data points. The district boundaries are also linked with the classified attribute data for effective visualization of changing trends of some demographic parameters. In the fourth section, major developmental indicators such as human development index and socio-economic indicators, which depict the disparities within the region, have been described. This section also throws light on some economic indicators, population and poverty, bank credit in priority sectors, and the dependency ratio. The main aim of this section is to basically map the indicators across the IHR, which could lead to developmental plan for the up-liftment of the region. State level data have also been presented in sections three and four for comparison among states/regions. The fifth section, i.e. conclusion, describes the usefulness of the monograph and its potential applications.

In nut shell, this monograph serves as a reference point not only to general readership but also to the researchers, administrators and development planners who are actively involved in the effective management of the resources of the Indian Himalayan region.

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Resources

The mountain resources are finite, dispersed and need to be managed carefully. Both, human and natural resources in the mountain can be quantified from the facts originating from the real world data. Therefore, proper analyses of finite resources based on real data may lead to implement effective plan for sustainable use of the same in the mountain regions. Development concerns in the Himalaya also revolve around how resources of the region could be managed for conserving/improving the environmental values of the region together with socio-economic development of the people (Rao, 1997; Samal et al., 2003).

The Himalaya comprises a series of parallel and converging ranges forming the highest mountain region in the world. More than 30 peaks of the Himalaya rise to the heights of 7,620 m (25,000 ft) or more, and one of these, Mount Everest (8,848 m) is the world's highest mountain. The Hindu-Kush Himalaya (HKH) mountain chain extending over 3,500 km length across the countries of Afghanistan, Pakistan, China, India, Nepal, Bhutan, Bangladesh and Myanmar, cover an area of about 43 lakh km². This region is generally considered underdeveloped in the respective countries and though rich in natural resources, the status of infrastructure development, which contributes to the livelihood status, is also poor.

Indian Himalayan region (IHR)

The Himalaya is the youngest mountain chain on the planet and is believed to be still evolving, and thereby, is unstable geologically and geomorphologically. Because of its extremely active geodynamic condition, even small tampering with the geoecological balance can initiate environmental changes that may eventually lead to alarming proportion (Valdiya, 1993, 1997, 2001; Gaur, 1998).

The Indian Himalayan region (IHR) with 250-300 km across stretches over 2,500 km from Jammu & Kashmir in the west to Arunachal Pradesh in the east spreading between 21° 57' – 37° 5' N latitudes and 72° 40' – 97° 25' E longitudes. This great chain of mountains in Indian territory extends all along the northern border of the country from the eastern border of Pakistan on the west to the frontiers of Myanmar in the east covering partially/fully twelve states of India, viz., Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Sikkim, Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura, Meghalaya and hills of Assam & West Bengal (Figure 1). The region has a total geographical area of about 5,33,604 km² being inhabited by 3,96,28,311 people, representing about 16.2% of total area and 3.86% of total population of India, respectively. The region is vast, rugged and versatile. It supports remarkable cultural, ethnic and biological diversity. Multiple ethnic compositions are a striking feature of the region; more than 171 of total 573 scheduled tribes of India inhabit the region (Samal et al., 2000). Broadly divided into eastern Himalaya, central Himalaya and western Himalaya, each region has its rich cultural diversity. Ethnic spectra of central and western Himalaya differ conspicuously from that of the north eastern Himalaya. The region is characterized by mountain specificities viz. inaccessibility, fragile, marginality, diversity (heterogeneity), niche (natural suitability) and adaptability (Jodha, 1992). The region occupies the strategic position of entire northern boundary (North-West to North-East) of the nation and contains snow-clad peaks, glaciers of higher Himalaya and dense forest cover of mid-Himalaya.

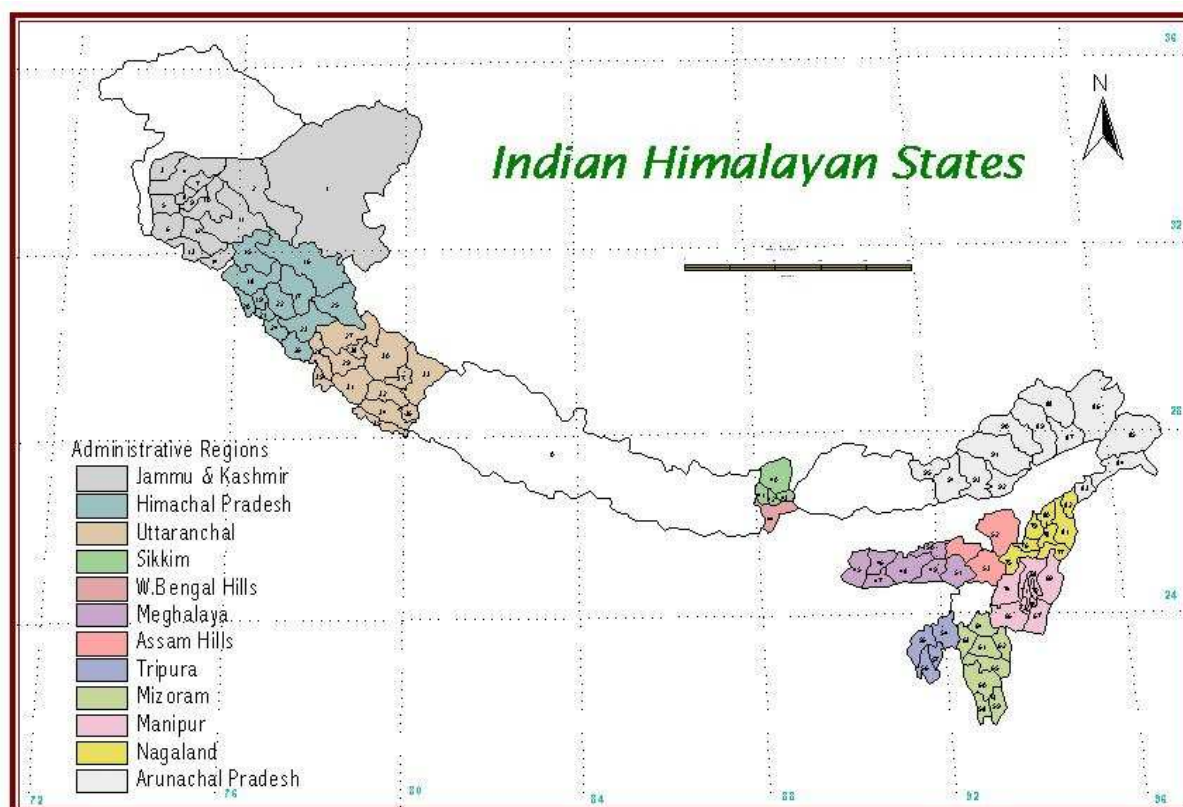


Figure 1: Indian Himalayan region (IHR)

Physiography

Physiographically, starting from the foothills of south (*Siwaliks*), this mountain range extends up to Tibetan plateau on the north (Trans-Himalaya). Three major geographical entities, the *Himadri* (greater Himalaya), *Himanchal* (lesser Himalaya) and the *Siwaliks* (outer Himalaya) extending almost uninterrupted throughout its length, are separated by major geological fault lines. Mighty but older streams like the Indus, Sutlej, Kali, Kosi and Brahmaputra have cut through steep gorges to escape into the Great Plains and have established their antecedence. The longitudinal valleys of the streams in their upper reaches occupy the troughs intervening the ranges. *Himadri*, the asymmetrical and the northern most range of glaciers and lofty snow peaks has a granitic core, flanked by metamorphosed sediments. The *Himanchal* forms the central chain of alternating ranges and valleys acquiring an elevation of about 5,000 m. It is composed mainly of highly compressed and altered rocks (Singh, 1991). The *Siwaliks* represent the outermost range of the system with roughly hogback appearance with a steeply sloping southern and gently sloping northern face. These newer and river-borne deposits derived from the rising Himalaya represent the most recent phase of the Himalayan orogeny.

The geology of the Himalaya is a record of the most dramatic and visible creations of modern plate tectonic forces. The Himalaya owes its origin to the collision between two continental tectonic plates (the peninsular India plate and the Eurasian plate) about 55 million year ago. This immense mountain range was formed by huge tectonic forces and sculpted by

unceasing denudation processes of weathering and erosion (Dèzes, 1999). However, the Himalayan orogeny does not relate to a single event; the western part being more recent.

Topographically, the belt has many superlatives: the highest rate of uplift (nearly 1 cm/year at Nanga Parbat, Pakistan), the highest relief (8848 m at Mt. Everest/Chomolangma, Tibet-Nepal), the source of some of the greatest rivers and the highest concentration of glaciers outside of the Polar Regions (Dèzes, 1999). Temporal and spatial variation caused by diversity in geological orogeny has resulted into a marked difference in climate and physiography and consequently in distribution pattern of biotic elements (Singh, 2004). One of the most striking aspects of the Himalayan orogen is the lateral continuity of its major tectonic elements. Since Blanford & Medlicott, 1879 and Heim & Gansser, 1939, the Himalaya is classically divided into four tectonic units than can be followed for more than 2400 km along the belt (Figure 2 and Figure 3) (Dèzes, 1999).

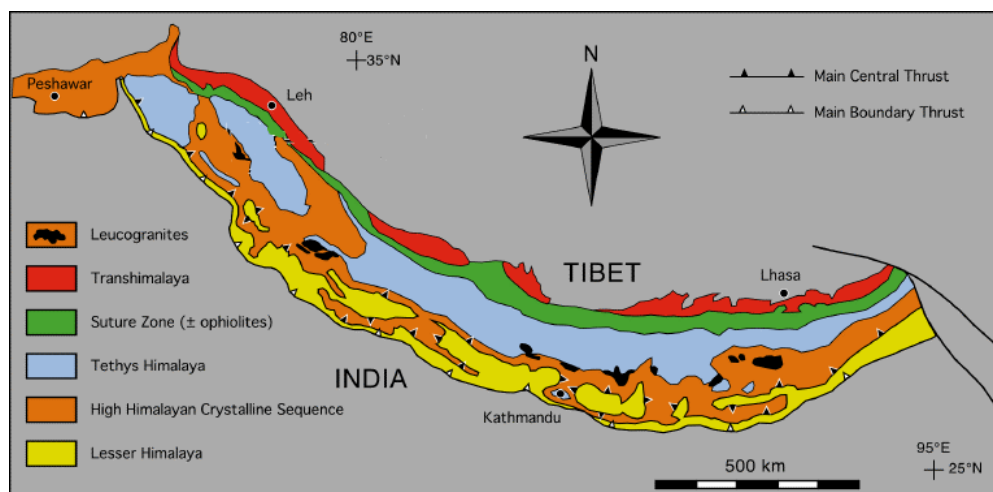


Figure 2: Geologic - Tectonic map of the Himalaya, modified after Le Fort (1988).

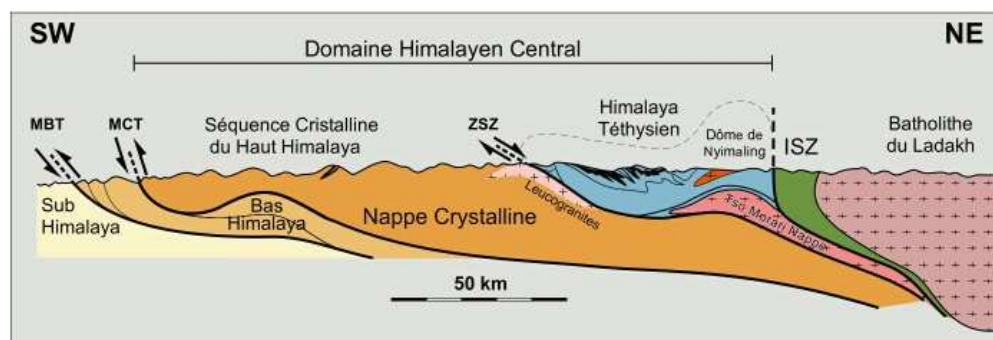


Figure 3: Simplified cross-section of the north-western Himalaya showing the main tectonic units and structural elements.

[Source : Dèzes, 1999]

Table 1: Major peaks and lakes in the Indian Himalayan region (IHR).

| Peaks | Altitude (m asl) | High altitude lakes | Altitude (m asl) |
|----------------|------------------|---------------------|------------------|
| K2 | 8611 | Suraj tal | 4950 |
| Kangchendzonga | 8598 | Tsomo Riri | 4524 |
| Nanga Parvat | 8128 | Panggon | 4350 |

| | | | |
|-------------------------------|------|-----------------|------|
| Masher Bram (East) | 7821 | Hemkund Sahib | 4329 |
| Nanda Devi | 7817 | Vasukital | 4300 |
| Rakaposhi | 7788 | Chandra tal | 4300 |
| Kamet | 7756 | Daityatal | 4275 |
| Sasher Kangri | 7672 | Dasir lake | 4270 |
| Chukhamba (Badrinath Shikhar) | 7138 | Manimahesh | 4080 |
| Trishul (West) | 7138 | Gandhi Sarovar | 3970 |
| Noonkonn | 7135 | Nako lake | 3662 |
| Phaunari | 7128 | Tsomgo (Changu) | 3658 |
| Kaunto | 7090 | Tulian lake | 3353 |
| Dunagiri | 7066 | Deoriatal | 3255 |

Sources: Jagran Varshiki, 1999

Official website of the Department of Tourism & Civil Aviation, Government of Himachal Pradesh

(www.himachaltourism.nic.in)

Glaciers play an important role in maintaining ecosystem stability as they act as buffers and regulate the runoff water supply from high mountains to the plains during both dry and wet spells. The Himalayan glaciers account for about 70% of the world's non-polar glaciers and affect the lives of millions of people in several countries: China, India, Pakistan, Afghanistan, Nepal and Bangladesh. Their runoff feeds two of the oldest rivers in the world, the Indus and the Ganges, whose tributaries carry precious water for 500 million people on the northern Indian plains. Most of the glaciers in the Himalaya are of a summer-accumulation type that is major accumulation and ablation take place simultaneously during summer (Fujita et al., 1997).

On the basis of the mode of occurrence and dimensions, glaciers have broadly been classified into three categories: valley glaciers, piedmont glaciers and continental glaciers. Himalayan glaciers fall in the category of valley glaciers. It has been estimated that an area of about 32 thousand km² is under permanent cover of ice and snow in the Himalaya (Negi, 1991). This amounts to about 17% of the total geographical area of the Himalaya. Higher concentrations of glaciers in the Himalaya lie in the regions with the highest mountain peaks, that is, Nanga Parbat, Nun Kun, Kinner Kailash, Nanda Devi, Nanda Kot, Annapurna, Mt. Everest, Makalu and Kanchanjunga. There are number of small, medium and large size glaciers in the Himalayan ranges with typical landform features. Some of the famous and important glaciers are listed in Table 2.

It is matter of concern that the Himalayan glaciers are receding at the fastest rates in the world due to global warming, threatening water shortage for millions of people particularly in India, China and Nepal. For instance, the Gangotri glacier is receding at an average rate of 23 metres per year (Anonymous, 2005).

Table 2: Major glaciers in the Indian Himalaya.

| Glaciers | Location |
|---------------|-----------------------------------|
| Siachen | Indus Basin, Karakoram |
| Rulung | Indus Basin, Trans Himalaya |
| Neh-Nar | Sind Basin, Great Himalayan Range |
| Thanak-Lungpa | Suru Basin, Zaskar Range |
| Braham Sar | Pir Pangal Range |
| Harmukh | Sind Basin, North Kashmir Range |

| | |
|-----------------|-------------------------------------|
| Gara | Tirung Khad Basin |
| Gor-Garang | Baspa Basin |
| Bara Shigri | Chenab Basin, Great Himalayan Range |
| Shaune Garang | Baspa Basin |
| Gangotri | Bhagirathi Basin, Garhwal Himalaya |
| Pindari | Alakananda Basin, Kumaun Himalaya |
| Chaurabari | Alaknanda Basin |
| Dunagiri | Alaknanda Basin |
| Changme-Khangpu | Sikkim Himalaya |
| Zemu | Sikkim Himalaya |

Vulnerability and disaster proneness of the region

The Himalayan frontal arc flanked by the Chaman fault in the west constitutes one of the most seismically active intra-continental regions in the world. The region in India is seismically one of the six most active regions of the world; the other five being Mexico, Tiwan, California, Japan and Turkey. The high seismicity in the region is attributed to the collision tectonics between the Indian plate and the Eurasian plate in the north and seduction tectonics along the Indo-Myanmar range in the east (Kayal, 1998). The proneness of a region to earthquake occurrence in the past and its probable occurrence in future is expressed in terms of seismicity. An accounting and analysis of temporal and spatial distribution of all earthquakes is pre-requisite for assessing in the seismic status of any region (Tiwari, 2002). The epicenter and magnitude range of earthquakes of different regions can be plotted on the maps and their relative concentration can be taken as one of the measures of seismicity. Various geographical parameters such as resistivity, magnetic gravity, etc., also reflect seismic status of a region.

Zone V: Covers the areas liable to seismic intensity IX and above on Modified Mercalli Intensity Scale. This is the most severe seismic zone and is referred here as Very High Damage Risk Zone.

Zone IV: Gives the area liable to MM VIII. This zone is second in severity to zone V. This is referred here as High Damage Risk Zone.

Zone III: The associated intensity is MM VII. This is termed here as Moderate Damage Risk Zone.

Zone II: The probable intensity is MM VI. This zone is referred to as Low Damage Risk Zone.

Zone I: Here the maximum intensity is estimated as MM V or less. This zone is termed here as Very Low Damage Risk Zone.

Table 3: Seismic zonation of the IHR states.

| States | Intensity MSK | Seismic Zone |
|------------------|------------------------|--------------|
| Jammu & Kashmir | MSK VIII to IX or more | Zone IV & V |
| Himachal Pradesh | MSK VIII to IX or more | Zone IV & V |
| Uttaranchal | MSK IX or more | Zone V |
| Sikkim | MSK VIII | Zone IV |
| Meghalaya | MSK IX or more | Zone V |
| Assam | MSK IX or more | Zone V |
| Tripura | MSK IX or more | Zone V |

| | | |
|-------------------|----------------|--------|
| Mizoram | MSK IX or more | Zone V |
| Manipur | MSK IX or more | Zone V |
| Nagaland | MSK IX or more | Zone V |
| Arunachal Pradesh | MSK IX or more | Zone V |

West Bengal hills falls in Zone IV.

{Source : BIS Seismic zone 2000}

Note : The Maximum Intensity on Modified Mercalli Scale (MSK) considered for the Five Zones are MSK IX or more in Zone V; MSK VIII in Zone IV; MSK VII in Zone III; MSK VI in Zone II. In the revision of the seismic zones in year 2000, the Seismic Zone-I has been merged in Zone-II by BIS Seismic Zoning Committee, hence there are now four zones only (number II, III, IV and V).

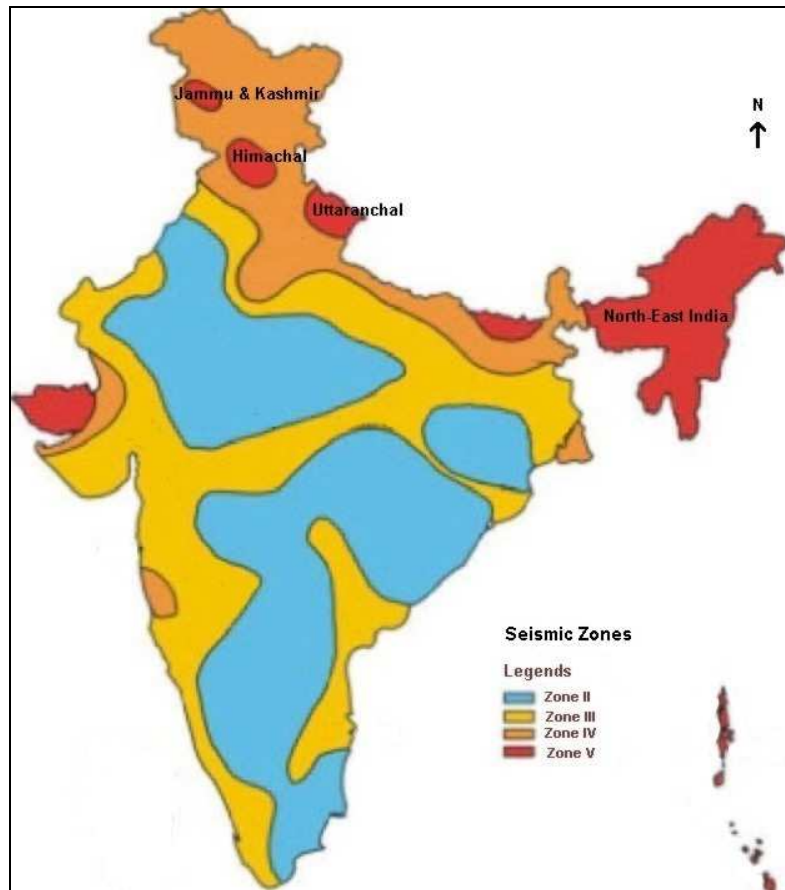


Figure 4: Seismic zonation map of India.

[Source: Current Indian Seismic Zone Map (IS 1893-2001), IIT-Kanpur, 2003]

Agro-climatic zonation

Broadly, the climatic zones in the Indian Himalayan region (IHR) are based on altitudinal gradient, which starts from warm sub-tropical (< 800m) to arctic zone (> 3,600m). Moreover, the strategy of agro-climatic planning aims at a more scientific utilization of available resources; both natural and man-made. India has been divided into 15 agro-climatic regions (zones) and is delineated on the basis of a commonality of agro-climatic factors like soil type, rainfall, temperature, water resources, etc. The IHR represents two agro-climatic zones, viz. Zone-I, the Western Himalayan region and Zone-II, the Eastern Himalayan region. The hill regions of Western and Eastern Himalayas have more diversity. The valleys receive good rainfall and have rich soils while the temperate areas of Ladakh of Western

Himalaya and Sikkim and Darjeeling in Eastern Himalaya are seized with inadequate moisture and climatic barriers of limited crop growing period. High soil erosion reduces soil fertility and productivity.

Table 4: Agro-climatic zonations in the IHR.

| Agro-climatic zone | Climate | Rainfall (in mm) | State/regions |
|--------------------|--|------------------|--|
| Zone I | High altitude temperate (humid to cold arid) | <1200 | Jammu & Kashmir |
| Zone I | Hill temperate (per humid to sub-humid) | 1200-1800 | Himachal Pradesh and Uttaranchal |
| Zone II | Per humid to humid | 1800-2200 | Nagaland, Mizoram, Manipur and Tripura |
| Zone II | Per humid to humid | 2200-2800 | Sub Himalayan West Bengal, Sikkim, Assam and Meghalaya |
| Zone II | Per humid to humid | >2800 | Arunachal Pradesh |

[Source: Agro-climatic Regional Planning, Planning Commission, 1989]

Zone I is characterized by low altitude sub-tropical region of south to mid to high temperate region in the mid-hills and extended to high hills on the north. The northern part of Himachal Pradesh and Jammu & Kashmir is cold arid. Zone II is characterized by hills and mountains of folded topography with near tropical to alpine climatic conditions. This is a high rainfall area and forests occupy more land, followed by barren land, leaving much smaller cultivable area. Shifting cultivation (*Jhum*) is practiced in nearly 1/3rd of cultivated area and mainly food crops are raised for sustenance.

Forest types and forest ecosystems of IHR

The Himalayan mountains have rich forests comprising over a thousand species of trees, shrubs, herbs and climbers. The types of forests in particular area depend on its climatic conditions, altitude, aspect, topography, soils, etc. Forests of the western Himalaya differ from those of the eastern Himalaya. The western Himalayan forests are diverse both in content and composition, whereas eastern Himalayan forests are very rich both in flora and fauna (Dhar et. al., 1997). At the macro level, the following forest types have been recognized in the Himalaya by Champion and Seth (1968) and Negi (1990):

Sub-tropical semi-desert: These forests are found in foothills of Jammu and Kashmir and western Himachal Pradesh, where the soil is gravelly and the area is barren. Scrub type of vegetation is predominant.

Montane sub-tropical: This group of forests occurs immediately above the sub-tropical semi-desert forests roughly between altitudes of 500-1500 m. The three pre-dominant sub-divisions are - sub-tropical broad leaved hill forests of east Himalaya, sub-tropical pine forests dominated by the lower or Siwalik chir pine forest, and sub-tropical dry evergreen forest occurring in Terai-Bhabar tract, Siwalik hills and foot hills of the lower Himalaya.

Montane wet temperate: These forests are further classified into Northern wet temperate forests occurring between 1800-3000 m in Arunachal Pradesh and Darjeeling hills of West Bengal and East Himalayan wet temperate forests consisting of lauraceous forests, lower and upper oak forests of the eastern Himalaya.

Himalayan moist temperate: This group of forests is well distributed all over the Himalaya usually between an elevation of 1500-3300 m. This group comprises of Lower western Himalayan temperate forests, Upper Himalayan temperate forests, and East Himalayan mixed temperate forests including coniferous forests and *Abies delavayi* forests.

Himalayan dry temperate: This group of forest occurs in the rain shadow areas of higher and trans-Himalaya where there is less precipitation from rain and more in the form of snow.

Sub-alpine forests: This group of forests lies near the snowline in all parts of the Himalaya, usually occupying a position between the alpine meadows and the temperate forests.

Moist alpine scrubs: These are alpine meadows occurring just below the snowline in the moister tracts of the Himalaya. Moist alpine scrub usually occurs above an elevation of 3500 m.

Dry alpine scrubs: These are alpine meadows occurring near the snowline in the drier parts of the Himalaya, usually in the inner dry valleys of the higher Himalaya and in the trans-Himalayan zones. Vegetation is xerophytic.

Biodiversity

India has a rich heritage of species and genetic strains of flora and fauna but growing population and urbanization are causing decrease of natural habitats resulting in the loss of biological diversity. About 6% of world plant species are found in India and it is estimated that the country is tenth among the plant rich countries and sixth among the centres of diversity and origin of agrobiodiversity in the world (Anonymous, 2000).

The climate and consequently the biological communities vary considerably along the altitudinal gradients in the IHR giving a heterogeneous dispersion of biodiversity elements in the region (Singh, 2004). The eastern Himalaya (north-east region in India) is one among the total 12 biodiversity hot spots in the world with extremely high plant biodiversity at national as well as global level. The IHR, as a whole, supports nearly 50% of the total flowering plants of India, of which 30% are endemic to the region. The IHR supports about 8,000 species of angiosperms (40% endemics), 44 species of gymnosperms (15.91% endemics), 600 species of pteridophytes (25% endemics), 1,737 species of bryophytes (32.53% endemics), 1,159 species of lichens (11.22% endemics) and 6,900 species of fungi (27.39% endemics) (Singh and Hajra, 1996). The richness of plant diversity is also due to the occurrence of species of other biogeographic regions like Irano-Turanian, Mediterranean, Indo-Chinese, Indian, Malaysian, Eastern Asiatic, Circumboreal, Australian, Amazonian, Brazilian, Andean, North American and others (Chatterjee, 1939; Samant and Dhar, 1997). There are over 816 tree species, 675 edibles and nearly 1,743 species of medicinal value found in the IHR (Samant et al., 1998).

The diversity of plant species used in various ailments is dispersed all across the IHR (Samal et al., 2002, Samal et al., 2004). Due to cultural and ethnic diversity in different biogeographic provinces of the region, the knowledge base varies considerably (Maikhuri et al., 1998; Dhyan, 2000). Most of the medicinal plants are being extracted for drug and pharmaceutical industries from wild populations. This has adversely affected the very existence of a number of plants of high commercial value (Farooque and Saxena, 1996). Further, with the increasing world demand and renewed global interest in traditional ethnopharmacy coupled with the increasing preference for natural substances in the health

care system, the natural stock of medicinal plants of the IHR is under tremendous pressure (Samant et al., 1998; Dhyani and Kala, 2005; Kala et al., 2006).

In India over 2,500 species of ethnobotanical uses are known (Jain, 1991). In the IHR, about 1,748 species of medicinal uses belonging to three taxonomic groups i.e., angiosperms (191 families, 878 genera and 1,685 species), gymnosperms (4 families, 6 genera and 12 species) and pteridophytes (28 families, 31 genera and 51 species) have been recorded (Samant et al., 1998). Of the total plants, the species richness is maximum in herbs (1,020 spp.) followed by trees (339 spp.), shrubs (338 spp.) and pteridophytes (51 spp.) (Table 5). Considering the species richness within the families, the family Asteraceae (129 spp.) is at the top followed by Fabaceae (107 spp.), Ranunculaceae (48 spp.), Rosaceae (41 spp.), Poaceae (40 spp.), Orchidaceae (37 spp.), Polygonaceae (32 spp.) and Gentianaceae (27 spp.) (Samant et al., 1998).

Table 5: Diversity of medicinal plants of the IHR.

| Taxonomic groups | Families | Genera | Species | Life forms | | | |
|------------------|----------|--------|---------|------------|--------|-------|---------------|
| | | | | Herbs | Shrubs | Trees | Pteridophytes |
| Angiosperms | 191 | 878 | 1685 | 1020 | 335 | 330 | - |
| Gymnosperms | 4 | 6 | 12 | - | 3 | 9 | - |
| Pteridophytes | 28 | 31 | 51 | - | - | - | 51 |
| Total | 223 | 915 | 1748 | 1020 | 338 | 339 | 51 |

[Source: Samant et al., 1998]

The environmental factors and topography play important role in speciation. In the context of IHR, high mountain peaks and deep river valleys together with other environmental factors, such as altitude, play important role in the range restriction/speciation.

The altitudinal distribution and utilization patterns of medicinal plants of the IHR are presented in Figure 3. The maximum diversity of medicinal plants exists in zone < 1,800 m (1,417 spp.). The diverse habitats and mild climatic conditions support the richness of biological resources and human habitations with diverse cultures and communities. Hence, the plethora of knowledge of plant species used in medicine is also maximum in the Indian Himalayan region (Samant and Dhar, 1997; Samant et al., 1998).

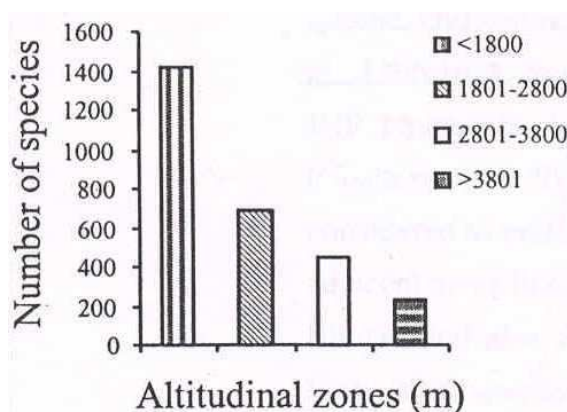


Figure 5: Altitudinal distribution of diversity of medicinal plants of the IHR.

[Source: Samant et al., 1998]

The rich biological diversity of IHR has been put to use by the native communities from ancient times. The very survival of these resources is now under threat from rapidly expanding human population and concomitant environmental degradation occurring at a fast pace. There are major gaps in the knowledge of biological resources and the means by which biological diversity is maintained (Heywood, 1995). Using IUCN criteria, about 121 species have been recorded in the Red Data Book (RDB) of Indian plants from the IHR, of these 17 are medicinal plants (Nayar and Shastri, 1987, 1988, 1990) and are presented in Table 6.

Table 6: Vulnerable, rare and endangered medicinal plants of the IHR recorded in the RDB of the Indian plants.

| Taxa | RDB status |
|---|---------------|
| <i>Aconitum deinorrhizum</i> | Vulnerable |
| <i>A. falconeri</i> var. <i>latilobum</i> | Vulnerable |
| <i>A. ferox</i> | Vulnerable |
| <i>Allium stracheyi</i> | Vulnerable |
| <i>Angelica nubigena</i> | Indeterminate |
| <i>Berberis affinis</i> | Vulnerable |
| <i>B. kashmiriana</i> | Rare |
| <i>Coptis teeta</i> | Vulnerable |
| <i>Codonopsis affinis</i> | Rare |
| <i>Dioscorea deltoidea</i> | Vulnerable |
| <i>Inula racemosa</i> | Vulnerable |
| <i>Nardostachys grandiflora</i> | Vulnerable |
| <i>Panax pseudoginseng</i> | Vulnerable |
| <i>Pittosporum eriocarpum</i> | Indeterminate |
| <i>Picrorrhiza kurrooa</i> | Vulnerable |
| <i>Saussurea costus</i> | Endangered |
| <i>S. bracteata</i> | Rare |

[Source: Samant et al., 1998]

Apart from the use of species as medicine, different parts such as roots, tubers, fruits, flowers, seeds and leaves/fronds of over 200 species of medicinal plants are consumed either raw, roasted, boiled, fried, cooked or in the form of oil, spice and seasoning materials, jams, pickles, etc. Most species form supplementary/substitute food at the time of scarcity (Dhyani and Khali, 1993; Dhyani and Dhar, 1994; Samant and Dhar, 1997; Dhyani, 2000). A few examples of such species are: *Ficus* spp., *Madhuca longifolia*, *Myrica esculenta*, *Rubus* spp., *Berberis* spp., *Fragaria vesca*, *Prunus cerasoides*, *P. cornuta*, *Embllica officinalis*, *Terminalia bellirica*, *Syzygium* spp., *Zizyphus* spp. (fruits), *Dioscorea bulbifera*, *Angelica glauca*, *A. nubigena*, *Pleurospermum angelicoides*, *Polygonatum* spp., *Chenopodium album*, *Fagopyrum debotrys* and *Alliums* spp., etc. The nutritional value of most of these species is comparable with cultivated species (Dhyani and Khali, 1993; Dhyani and Dhar, 1994; Samant and Dhar, 1997).

Many medicinal plants in the IHR have multipurpose use and about 81 medicinal plant species are also the source of important fatty and essential oils used for edible as well as industrial purposes. There are a number of species of medicinal plants in the IHR which are in trade. Some major species are: *Aconitum heterophyllum*, *Embllica officinalis*, *Terminalia chebula*, *T. bellirica*, *Allium stracheyi*, *A. humile*, *Angelica glauca*, *Juglans regia*, *Paris*

polyphylla, *Zanthoxylum armatum*, *Coptis teeta*, *Saussurea costus*, *Panax pseudoginseng*, *Podophyllum hexandrum* and *Cinnamomum tamala*, etc. (Samant et al., 1998).

Areas rich in biodiversity and encompassing unique and representative ecosystems are identified and designated as Biosphere Reserves. Nanda Devi (Uttaranchal), Nokrek (Meghalaya), Dehang-Debang (Arunachal Pradesh) and Kangchendzonga (Sikkim) are the biosphere reserves in the IHR.

Faunal diversity

The Himalayan massif is a comparatively recent phenomenon on the geological time scale and in the past was not a barrier to animal movements that it is today. Consequently, much of the high altitude fauna of this area extends over the whole complex of mountain ranges and are typical of both the oriental and palaeartic regions (Saharia, 1982). Altitude, however, influences the distribution of flora as well as fauna in the region. In addition to the influence of altitudinal change on ecology, there are marked east-west variations due to decrease in monsoon rainfall towards the west. The western Himalaya is a region of low rainfall, heavy snowfall and conditions are more akin to temperate regions. On the other hand, eastern Himalaya has high rainfall; snowfall is confined to very high altitudes and at lower altitudes conditions resemble the tropical rain forests.

Fauna in the IHR presents one of the richest assemblages in the Indian subcontinent. Many species such as the Snow Leopard, the Himalayan Brown Bear, Red Panda, Himalayan Lynx, Kashmir Stag, Himalayan Musk Deer, Yak, Himalayan Ibex, Himalayan Thar and the Himalayan Bearded Vulture are unique to the region. Species diversity both amongst invertebrates and vertebrates appears to be very significant and includes many primitive, new and evolving forms. The vertebrate fauna in the Himalaya provides a high degree of diversity at species level. Out of the total mammalian species, 65% are recorded in the Himalaya; 50% of the total bird species occur in the region and likewise 35% reptiles, 36% amphibians and 17% fishes were documented from the mountain ecosystem establishing the status of the area as a center of origin and evolution of biotic forms (Ghosh, 1997). Moreover, 29 out of 428 species of reptiles from India, 35 species of amphibia (out of 200) and 36 species of freshwater fishes (out of 1,300) are endemic to the Himalayan region (Ghosh, 1997).

The Himalayan foothills are characterized by *bhabar* and *tarai* formations and the Siwalik ranges in the south. This is one of the richest areas for the typical big mammals, viz. elephant, tiger, sambar, swamp deer, cheetal, hog deer, barking deer and wild boar, etc. The high altitude regions of central and western Himalaya consist of the belt of coniferous-pine forests occupying the altitudinal zone from 1,500 to 2,500 m. The pine belt mostly acts as a transition zone for the rich fauna of the alpine zone. One of the typical animals of the high altitude cold-desert regions of Ladakh and Tibet is the wild ass; identified as a rare and endangered species. The bovid family is well represented in the region particularly in the high altitudes. More species of wild goats and sheep live in this region than anywhere else. The largest bovid, the yak, has been domesticated for centuries by the people of Tibet and Ladakh but wild yaks are still found.

Among mammals, the most beautiful animal is snow leopard with a long thick of smoky grey with black rosettes. It is smaller than the average panther. It preys on wild sheep, goat, musk deer and follows them up and down the mountainous slopes on their seasonal

migration. These leopards have also been hunted for their beautiful coat, which is highly priced and as a result now they are regarded as a threatened species. The other predators include the wolf, fox, smaller cats like Pallas cat and the black and brown bears.

A number of pheasants characterize the Himalayan mountain range with most attractive plumage. Amongst these are the Himalayan monal pheasant, the western tragopan, the satyr tragopan, the koklass, the white crested khalij and the cheer pheasant.

The eastern Himalayan sub-zone forms the dense evergreen and semi-evergreen vegetation of the foothills. The animal life in the temperate region is different from the western Himalaya and is characterized by the presence of Indo-Chinese fauna. The red panda, hog badgers, ferret badgers, crestless porcupines are the typical species of this area. Three kinds of goat antelopes are also found in the eastern Himalaya and are relatives of the European chamois. Serow is a goat like animal with a black coat, large ears, white beard and a grayish mane. It lives mostly in the eastern Himalayan forests around 2,000 m altitude and extends into tropics of Malaya and Sumatra where it is found at lower altitudes on steep limestone outcrops. Goral is a smaller goat found throughout the Himalayan range both in the western and eastern Himalaya, living on rugged grassy hill sites and on rocky grounds near the conifer forests. Takins are the largest of the goat antelopes and live in the eastern Himalayan forests near the timberline. In summer, large herds graze above the timberline but in winter, the animals break up into smaller groups and migrate to grassy valleys lower down the mountains.

Agricultural situation of IHR

Agriculture is the major livelihood option in India as only cultivators and agricultural labourers comprise more than 58.4% of total workforce in the country. Also in terms of country's land use pattern, the agricultural land constitutes the major share occupying about 55.8% of total geographical area followed by forest cover (20.6%) and wastelands (20.2%). However, the Indian Himalayan region (IHR) displays a different picture in land use pattern and its dependency on agricultural land. The Himalayan people have traditionally practiced integrated agriculture, balancing cultivation, agro-forestry, animal husbandry and forestry. Mountain geography and inaccessibility have helped maintain agri-biodiversity; yet commercial agriculture is not as high-yielding and profitable as in the plains. Here forest is the major land use pattern, which covers over 52% of total reporting area followed by wastelands and agricultural land. However, the dependency on its limited arable land is marginally higher in the IHR as cultivators and agricultural labourers together comprise about 59% of total workforce in the region (Nandy and Samal, 2005).

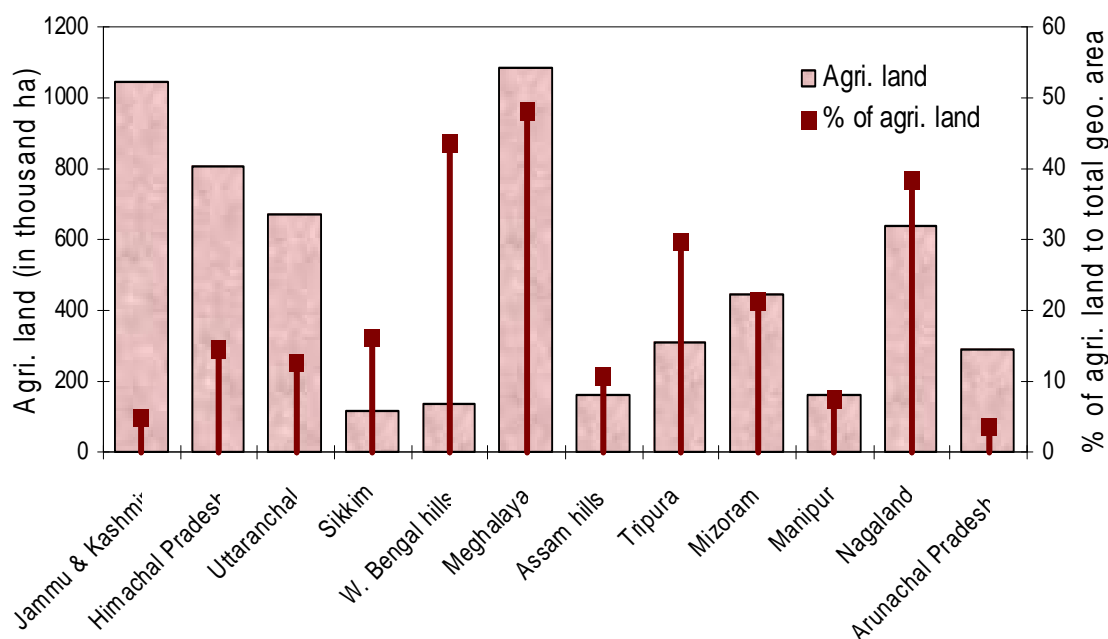


Figure 6: Distribution of agricultural land across the IHR
 [Source : Nandy and Samal, 2005]

Land and water resources

Land resources

Agriculture is the major land use at the national level followed by forests. But in the IHR, forest cover is the major land use, which covers about 52% of the total reporting area of the region followed by wastelands. The forest cover in the region has recorded marginal increase (about 0.41%) during the period 1999-2001 where as the country's forest cover has recorded a significant growth (about 6%) during the same period in spite of rapid urbanization. This could be because of high dependency on forest in the IHR than the arable land that contributes only about 11% of its total reporting area.

The people of the Himalayan region, especially those in the north-east, over the years had adopted traditional practices of replenishment in the region. One such method was *Jhum* cultivation, which is basically 'rotational bush fallow' agriculture. This traditional tribal practice enabled regeneration of forests before the same land was cultivated again. The *Jhum* cycle was once considered to be as long as 25 years, but in the recent past, studies have shown that the cycle has shrunk to as short as 4-5 years (Barthakur, 1981). As the *Jhum* cycle becomes successively shorter, the rate of soil erosion gets accelerated. This is a strong indicator of the deteriorating ecological balance of the region and is also a statement on the increasing human pressure on land and growing food needs.

Table 7: Major land use distribution pattern in the IHR.

| States/Regions | Geographical area (km ²) | % of area under | | |
|-----------------|---|------------------|------------|--------------|
| | | Agriculture land | Wastelands | Forest cover |
| Jammu & Kashmir | 222236* | 4.7 | 64.6 | 9.6 |

| | | | | |
|-------------------|---------|------|------|------|
| Himachal Pradesh | 55673 | 14.5 | 56.9 | 25.8 |
| Uttaranchal | 53483 | 12.5 | 30.1 | 44.8 |
| Sikkim | 7096 | 16.1 | 50.3 | 45.0 |
| W. Bengal hills | 3149 | 43.5 | 2.2 | 69.7 |
| Meghalaya | 22429 | 48.2 | 44.2 | 69.5 |
| Assam hills | 15322 | 10.5 | 56.6 | 79.8 |
| Tripura | 10486 | 29.6 | 12.2 | 67.4 |
| Mizoram | 21081 | 21.2 | 19.3 | 83.0 |
| Manipur | 22327 | 7.3 | 58.0 | 75.8 |
| Nagaland | 16579 | 38.4 | 50.7 | 80.5 |
| Arunachal Pradesh | 83743 | 3.5 | 21.9 | 81.3 |
| India | 3287263 | 55.8 | 20.2 | 20.6 |

*Included 78,114 and 37,555 km² occupied by Pakistan and China, respectively, and 5,180 km² handed over by Pakistan to China.

[Source : Westlands Atlas of India 2000 & FSI 2000]

Water resources

India is rich in surface water resources. Average annual precipitation is nearly 4,000 km³ and average flow in the river system is estimated to be 1,880 km³ (Anonymous, 2000). The IHR has vast fresh water resources primarily in its streams/ivers, lakes and glaciers. The region yields about 500 cm³ water every year. Fluctuations in snow and ice cover are responsible for climate and hydrological variation to a great extent.

The main sources of water in this mountain chain are rainfall from southwest monsoon, winter rains and heavy snowfall in many parts of the region especially in the winter season. The melt water from the snow and ice contributes significantly to the water resources of the Himalaya. A part of this snow-melt water as well as rain seeps into the soil forms ground water, which comes up on the surface as springs. It has also been estimated that about 8,634 million m³ of water flows down Himalayan rivers every year (Negi, 2003). The main river systems draining the Himalayan region are the Indus, the Ganges, and the Brahmaputra. The catchment of Indus river system in western Himalaya forms part of Jammu & Kashmir and Himachal Pradesh, while Ganga river rising from the snout of Bhagirathi drains very large catchment of Himachal Pradesh and entire Uttaranchal. In the eastern part, the Brahmaputra river system drains a considerable area of the Tibet and North Bengal, Sikkim, Bhutan and Arunachal Pradesh in the IHR.

Table 8: Principal glacial-fed river systems of the Himalaya.

| River | Mountain Area (km ²) | Glacier Area (km ²) |
|----------|----------------------------------|---------------------------------|
| Indus | 268842 | 7890 |
| Jhelum | 33670 | 170 |
| Chenab | 27195 | 2944 |
| Ravi | 8092 | 206 |
| Sutlej | 47915 | 1295 |
| Beas | 12504 | 638 |
| Jamuna | 11655 | 125 |
| Ganga | 23051 | 2312 |
| Ramganga | 6734 | 3 |
| Kali | 16317 | 997 |
| Karnali | 53354 | 1543 |
| Gandak | 37814 | 1845 |
| Kosi | 61901 | 1281 |

| | | |
|-------------|--------|-----|
| Tista | 12432 | 495 |
| Raikad | 26418 | 195 |
| Manas | 31080 | 528 |
| Subansiri | 81130 | 725 |
| Brahmaputra | 256928 | 108 |
| Dibang | 12950 | 90 |
| Lohit | 20720 | 425 |

[Source: Hasnain, 1999]

Major glacial fed rivers such as Indus, Ganga, and Brahmaputra along with the distribution of glaciers in Himalayan region are shown below.

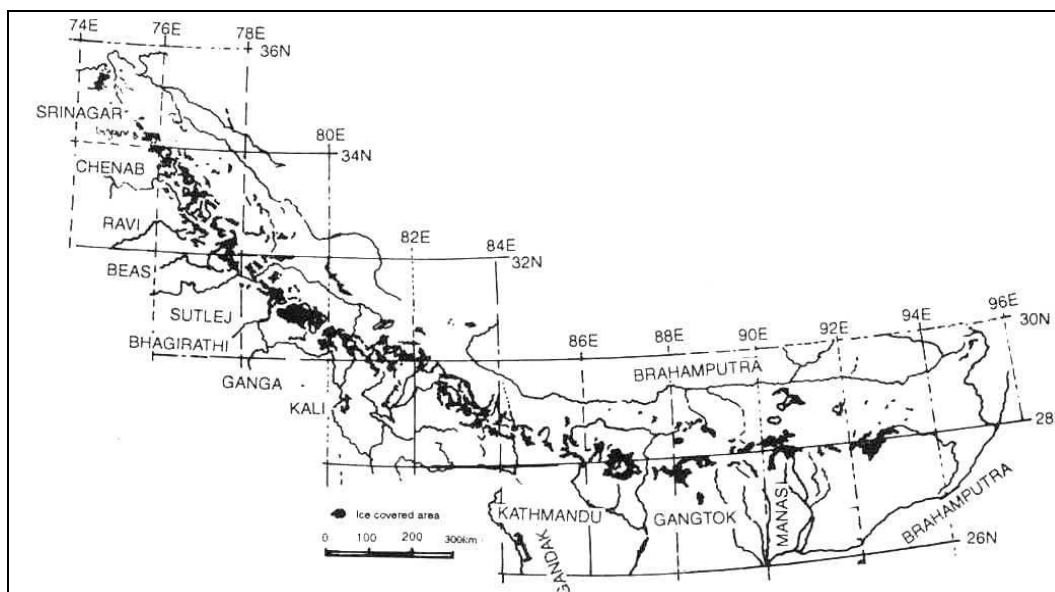


Figure 7: Distribution of glaciers along the Himalayan arc.

[Source: Hasnain, 1999]

Table 9: Statewise water resource in the IHR.

| State | Length of rivers/canals (thousand km) | Water bodies (lakh hectare) | Total replenishable ground water (mcm/yr.) |
|-------------------|---------------------------------------|-----------------------------|--|
| Jammu & Kashmir | 27.78 | 0.30 | 4425.84 |
| Himachal Pradesh | 3.00 | 0.43 | 365.81 |
| Uttaranchal* | 2.69 | 0.20 | - |
| Sikkim | 0.90 | 0.03 | - |
| Meghalaya | 5.60 | 0.10 | 539.66 |
| Tripura | 1.20 | 0.17 | 663.41 |
| Mizoram | 1.40 | 0.02 | - |
| Manipur | 3.36 | 0.46 | 3154.00 |
| Nagaland | 1.60 | 0.67 | 724.00 |
| Arunachal Pradesh | 2.00 | 0.04 | 1438.50 |

[Source: Hand book on Fisheries Statistics 1996, Department of Agriculture and Cooperation and Ground Water Statistics 1996, Central Ground Water Board]

Mcm: Million cubic Metres

Water bodies include reservoirs, lakes, ponds, tanks, beels and oxbow, etc.

Data for the hill districts of Assam and West Bengal are not available separately.

*Source : Annual Report 2003-04, Deptt. of Animal Husbandry & Dairying,

Social Communities in IHR

Societies are discrete formations of people, enduring entities that take time to emerge within the bounds of specific territory and political organization. Expression of identity by various groups of people based on language, territory, religion, common origin and a host of other cultural elements are all comparatively more ephemeral than societies. While ethnicity and ethnic movements are processes dependent on mobilization of cultural resources, societies are entities that have temporal continuity. Ethnic self-consciousness and its consolidation and asserting along the lines of tribe, community or language groups have become increasingly manifest in the recent years in the entire region. In every one of the eight north-eastern states of India that make up the north-eastern region (NER), there is a comic perception of who constitute the 'insiders' and who are 'outsiders' vying for the limited number of jobs and other assets and resources of the respective territories. Regionalism along social and ethnic lines has been a dominant development in the years since independence (Anonymous, 2002). However, Sikkim a new inclusion to the NER is small (in terms of area as well as population) and multi-ethnic state. Broadly, the population of the state can be divided into tribal and non-tribal groups, where Nepalese ethnic group is predominant.

Multiple ethnic composition is a striking feature of Himalayan realm. There are numerous tribal groups confined to the Indian Himalayan region. Population size and distribution of different ethnic groups greatly varies. Among smaller groups, Raji tribe of Kumaon (in Uttaranchal) is represented by only about 531 individuals (Samal et al., 2001). Ethnic spectra of central and western Himalaya differs conspicuously from that of the north-eastern region. Racially, majority of tribal communities, particularly those in north-eastern region, exhibit 'mongoloid' affiliation as could be observed from the physical features of the people. In western and central Indian Himalaya, 'Khasa' ethnic characteristics are more conspicuous.

The Indian Himalayan region (IHR) can be divided into following regional divisions based on population features and vegetation elements:

- | | | |
|---|---|------------------------|
| 1. Western Himalaya (Kashmir Himalaya) | 3. Eastern Himalaya (Arunachal Pradesh including Sikkim & Darjeeling Hills) | 4. Himachal Himalaya |
| 2. Central Himalaya (Uttaranchal) | | 5. Purvanchal Himalaya |

The Western Himalaya: Culturally, the Himalayan region of Kashmir is a zone of convergence and diffusion expression in three religeo-cultural streams – the Muslims, Buddhists (Tibeto-Mongoloids) and Hindus. These culture groups still maintain their regional expression in three distinct parts of the region: the Gilgit, Baltistan and Poonch region is overwhelmingly Muslim; Ladakh is predominantly Buddhist; while Jammu is mainly Hindu.

The Himachal Himalaya: The semi-arid highland zone of Himachal Himalaya, trans-Himalayan tracts of Lahaul & Spiti and Kinnaur have a low population and are mainly inhabited by Buddhists (Tibetan), while the other parts of Himachal Pradesh are mainly inhabited by Hindus.

The Central Himalaya: The Central Himalayan region has its own distinctiveness, reflecting the sublime blend of Indian cultural traits associated with the Badrinath-Gangotri complex, which has absorbed Mongoloid cults into Hindu moulds. Culturally Uttarakhand Himalaya is largely dominated by the local Pahari (Kumauni & Garhwali) culture in the middle and low altitudes, while in the northern high-altitude valleys, the Bhotia cultural system predominates. The population is predominantly Hindu.

The Eastern Himalaya: The Eastern Himalaya region comprising Arunachal Pradesh, Sikkim and Darjeeling Hills of West Bengal has been populated by hardy Indo-Mongoloid, Tibetan, and Nepalese people who have adapted themselves to the rugged terrain and the rigorous climate. Mongoloid tribes from Tibet, Indo-Aryan people from north India, and the Lepchas from Assam and upper Burma have settled in the Himalayan valleys and developed distinct cultural patterns. The Buddhist and Lamaistic religion and culture are found throughout the region with the exception of Darjeeling district of West Bengal, which comprises people of various races and religions.

The Purvanchal: In the Purvanchal Himalaya, the majority of tribes follow their animistic religious traditions, while some tribes like Naga, Khasi, Mizo, a section of Bodo and few others have embraced Christianity. The process of Hinduisation is also operative among some groups of Bodo, Hajong, Garo, and Rabha, etc. Buddhism retains its hold on some tribes like Monpa, Sherdukpen, Khampti and Singpho. The Naga population and culture is predominant in Nagaland, while to the south there is a distinct socio-cultural pattern, characterized as Manipuri culture.

Scheduled tribe population

The tribes and their tracts constitute very significant parts of the under-developed people and area of the Indian Republic, comprising about 8.13% and 18.70% of the population and area of the country, respectively. In India, there are about 573 scheduled tribes have been recognized. In fact, the tribal population in India is 1.2 times more than the total population of the United Kingdom or France, 2.5 times of Canada, 4 times of Sri Lanka, two-third of Bangladesh and more than half of Pakistan. In Indian context, a tribe is defined as a group with traditional territory, specific name, common language, strong kin relations, association with clan structure, tribal authority and rigid inclination to religion and belief. Functional independence, homogeneity, primitive means of exploiting resources, economic backwardness, rich culture and tradition and least desire to change are some other characteristics dominated in tribes. State wise, Madhya Pradesh harbours the largest tribal population (23.73% of total tribal population of India), followed by Maharashtra (11.28%), Orissa (10.84%) and Bihar (10.20%). However, when it comes to the number of scheduled tribe communities, the largest numbers are found in Orissa (62), followed by Karnataka (49), Maharashtra (47) and Madhya Pradesh (46). In terms of percentage share of tribal population in the total population of various States/Union Territories, Mizoram tops the list (94.75%), followed by Lakshadweep (93.15%), Nagaland (87.70%) and Meghalaya (85.53%). (Fig. 8).

The Indian Himalayan region represents nearly 18.5 per cent of the total tribal population of India. As many as 171 of total 573 (Table 10) scheduled tribes of India inhabit

the region. The tribal populace of the IHR, generally, inhabits inhospitable terrains where the soil productivities are low. Shifting cultivation and dry upland cultivation are traditionally the most important sources of livelihood of majority of tribal communities. In the IHR, the percentage of ST population (28.16%) is much higher (excluding the ST population of Jammu & Kashmir) than that of the country's total tribal population (8.13%). The contribution of scheduled tribe population of IHR is 9.46% (excluding the ST population of Jammu & Kashmir) to the country's ST population.

Table 10: Tribal situation in the IHR.

| States/Union Territories | Number of Scheduled Tribes | Percentage to India's total Scheduled Tribe Population | Percentage to Total Population of State/ Union Territories |
|--------------------------|----------------------------|--|--|
| Arunachal Pradesh | 12 | 0.85 | 63.66 |
| Assam | 14 | N.A. | N.A. |
| Himachal Pradesh | 8 | 0.34 | 4.22 |
| Jammu & Kashmir | 8 | N.A. | N.A. |
| Manipur | 29 | 0.97 | 34.41 |
| Meghalaya | 17 | 2.34 | 85.53 |
| Mizoram | 14 | 1.01 | 94.75 |
| Nagaland | 5 | 1.64 | 87.70 |
| Sikkim | 2 | 0.14 | 22.36 |
| Tripura | 19 | 1.32 | 30.95 |
| Uttaranchal | 5 | 0.44 | 0.21 |
| West Bengal | 38 | 5.87 | 5.60 |

Source: Samal et al., 2000

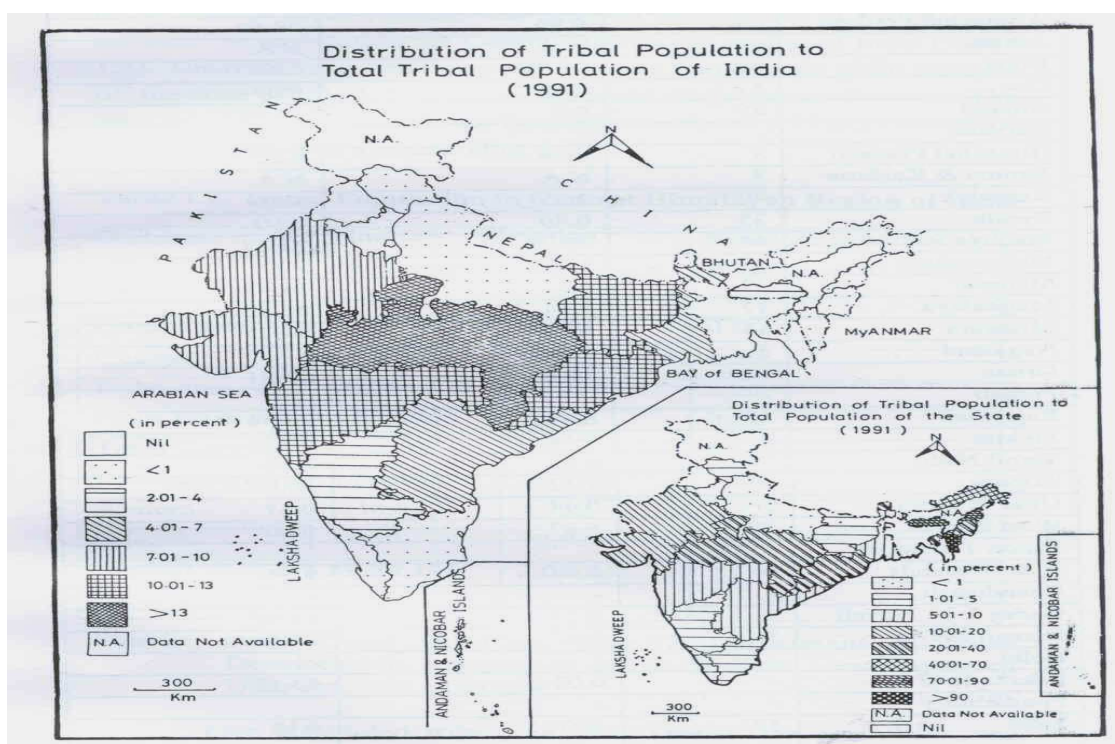


Figure 8: Distribution of tribal population in India [Source: Samal et al., 2000]

Scheduled caste population

The Scheduled Caste (SC) population in India constitutes about 16.33% of India's total population. In the IHR, the percentage of SC population is 13.49% (excluding the SC population of Jammu & Kashmir), which is lower than the national figure (16.33%). Among the states of IHR, the percentage share of SC population is highest in Himachal Pradesh (42.71). However, north-eastern states have least SC Population.

R&D projects funding in IHR

The research and development (R&D) projects funding in the Indian Himalayan region is inadequate. Almost 5.28% projects (out of total R&D projects) were implemented in the IHR from 1985-86 to 1998-99 with a fund allocation of 4.45% of the total R&D budget of the country (Samal et al., 2005).

PROFILE OF THE INDIAN HIMALAYAN STATES

| <i>State Code</i> | <i>State/region</i> | <i>% share of geographical area in the IHR</i> |
|-------------------|---------------------|--|
| 1 | Jammu & Kashmir | 41.65 |
| 2 | Himachal Pradesh | 10.43 |
| 3 | Uttaranchal | 10.02 |
| 4 | Sikkim | 1.33 |
| 5 | West Bengal hills | 0.59 |
| 6 | Meghalaya | 4.20 |
| 7 | Assam hills | 2.87 |
| 8 | Tripura | 1.97 |
| 9 | Mizoram | 3.95 |
| 10 | Manipur | 4.18 |
| 11 | Nagaland | 3.11 |
| 12 | Arunachal Pradesh | 15.69 |

Jammu & Kashmir



Physiography

Jammu & Kashmir, located in the extreme north of the country, is situated between 32° 17' and 37° 5' N latitudes and 72° 40' and 80° 30' E longitudes. It is bounded on north by China, on east by Tibet, on south by Himachal Pradesh and Punjab and on west by Pakistan. Geographically, this state is divided into four zones – the mountainous and semi-mountainous plain known as Kandi belt, hills including Siwalik ranges, mountains of Kashmir valley and Pir Panjal range, and Tibetan tract of Ladakh and Kargil. The state has a number of lakes, rivers, rivulets and glacial regions. The important rivers of this state are Indus, Chenab and Sutlej (Jhelum).

There are extreme variations in climate in the state due to its location and topography. The climate of the state varies from tropical in Jammu plains to semi-arctic cold in Ladakh with Kashmir and Jammu mountainous tracts having temperate climatic conditions. The temperature of this state varies spatially. Leh is coldest and Jammu is the hottest region in the state. In the winter nights, temperature goes down below zero and very often heavy snowfall occurs during November to February. The annual rainfall varies from region to region with 92.6 mm in Leh, 650.5 mm in Srinagar and 1,115.9 mm in Jammu. Geologically, the state represents constituted rocks varying from the oldest period of the earth's history to the youngest present day river and lake deposits.

Jammu & Kashmir at a glance

| | |
|---|---|
| Geographical area (km ²) | 2,22,236* |
| Capital | Srinagar |
| Number of districts | 14 |
| Population (2001) | 10,069,917 [Males: 53,00,574; Females: 47,69,343] |
| Major languages | Kashmiri, Dogri, Urdu |
| Status | Ranks 6 th in area and 18 th in population in India; 1 st in area as well as population among the IHR states |
| Major rivers | Indus, Chenab, Sutlej |
| Forest cover (2001) | 9.56% of total geographical area |
| National parks | Hemis, Kistwar |
| Major wildlife sanctuaries | Changthang, Karakoram, Overa-Aru |
| Rural population (2001) | 75.12% of total population |
| Number of towns and villages including un-inhabited villages (2001) | 75 and 6,652 |
| Agricultural land (2001) | 4.7% of total geographical area |
| Per capita income (NSDP) (1999-2000) | Rs. 7435/- (at 1993-94 prices) |

| | |
|--|---|
| Population density (2001) | 99/km ² |
| Birth rate (2000) | 16.9/thousand |
| Death rate (2000) | 6.2/thousand |
| Infant mortality rate | 45/thousand [#] |
| Literacy rate (2001) | 54.46% [Male: 65.75%; Female: 41.82%] |
| Sex ratio (2001) | 900 (females per 1000 males) |
| Schedule Castes & Schedule Tribes population (% in total population) | 7.59% and 10.9% |
| Major tribal communities | Balti, Beda, Boto, Brokpa, Drokpa, Chnagpa, Garra, Mon, Purigpa, Gujjar, Bakarwal, Gaddi, and Sippi |
| Number of Schedule Castes | 13 |
| Number of Schedule Tribes | 8 |
| Major source of occupation | Agriculture (80% of total occupation) |
| Major industries | Handicrafts & handlooms |

*Included 78,114 and 37,555 km² occupied by Pakistan and China, respectively, and 5,180 km² handed over by Pakistan to China

[#]Provisional figure of 2002 from SRS, Office of the Registrar General of India, Ministry of Home Affairs.

Districts of Jammu & Kashmir

| Code-Districts | Area (km ²) | Population 2001 | Headquarter |
|----------------|-------------------------|-----------------|-------------|
| 01. Leh | 82,665 | 117,637 | Leh |
| 02. Kargil | 14,036 | 115,227 | Kargil |
| 03. Kupwara | 2,379 | 640,013 | Kupwara |
| 04. Baramula | 4,588 | 1,166,722 | Baramula |
| 05. Poonch | 1,674 | 371,561 | Poonch |
| 06. Rajauri | 2,630 | 478,595 | Rajauri |
| 07. Srinagar | 2,228 | 1,238,530 | Srinagar |
| 08. Badgam | 1,371 | 593,768 | Badgam |
| 09. Pulwama | 1,398 | 632,295 | Pulwama |
| 10. Anantnag | 3,984 | 1,170,013 | Anantnag |
| 11. Doda | 11,691 | 690,474 | Doda |
| 12. Udhampur | 4,550 | 738,965 | Udhampur |
| 13. Jammu | 3,097 | 1,571,911 | Jammu |
| 14. Kathua | 2,651 | 544,206 | Kathua |

Economy

Agriculture

Agriculture is the mainstay of more than 80% people in Jammu & Kashmir. Major food crops are wheat, paddy and maize. Barley, jowar and bajra are also cultivated in some parts of the state. Agro-climatic condition of this state supports horticulture; about 5 lakh families, directly or indirectly, are related with horticulture activities.

Industry

Handicrafts, the traditional industry in the state, are receiving top priority in view of employment potential and demand in wood carving, paper-machine, carpets, shawls and embroidery, etc. Carpets earn a substantial foreign exchange. Export of handicraft products has increased about six fold in the last decade. Handloom Development Corporation is

producing woolen items like export tweed, blazers, blankets, shawls, dhussas and kani shawls, etc.

As per Annual Survey of Industries (1999-2000), Jammu & Kashmir had 393 factories employing 26,311 persons. Total investment was Rs. 58,504 lakh and net income generated was Rs. 18,123 lakh. As on 31st March 2002, there were about 32,245 small scale industries in the state.

Infrastructure

Irrigation

Special initiatives have been taken for flood control, drinking water supply and irrigation in Jammu & Kashmir. In the Eighth Five Year Plan, there was a provision for Rs. 205.52 crore for the above mentioned purposes. As on 1998-99, net irrigated area was of 309 thousand ha and gross irrigated area was 447 thousand ha in the state.

Power

As on October 2002, power generating capacity of the state was 1233.63 MW.

Transport

Roadways: There were 823 km of national highways, 688 km of state highways, 7,671 km of major district roads and 3,372 km of village roads, as on February 2002, in the state.

Railways: At present, there is railway connection up to Jammu. The extension of Jammu to Udhampur and survey works in Udhampur-Srinagar section are in progress for further extension of railway tracks in the state. Total rail track length was 96 km in 2000-01.

Aviation: The major airports of the state are Srinagar, Jammu and Leh.

Health

The birth rate and the death rate of this state recorded in 2000 were 16.9/thousand and 6.2/thousand, respectively. Jammu & Kashmir had 67 hospitals and 610 dispensaries (as on January 1998) and 337 Primary Health Centres (as on July 2000).

Education

Education has always received the utmost attention in the state of Jammu & Kashmir. School education is totally free. Of late terrorism has hampered the education system of this state; the terrorists have a special fondness for burning down schools. According to 2001 Census, literacy in Jammu & Kashmir is 54.46% against the national average of 65.38%. The male and female literacy rates are 65.75% and 41.82%, respectively.

Telecommunication

As on January 2003, there were 2,52,631 telephone connections and 4,096 village public telephones provided by the Bharat Sanchar Nigam Limited (BSNL) in the state.

Tourism

Kashmir valley is described as a paradise on the earth. Major tourist places are Chashma Shahi springs, Shalimar Bagh and Dal Lake, etc., in Srinagar; Gulmarg, Pahalgam and Sonamarg, etc., in the Valley; various ancient temples, Buddhist rites and scenic beauty in Ladakh; Vaishno Devi temple and Patnitop near Jammu, etc. When the heat in the plains of India becomes oppressive, the people turn to the hills and visit Kashmir valley and enjoy living in house boats. But at present, the flow of tourists to the Kashmir valley is interfered by the universally denounced terrorism. The famous shrine of Mother Goddess Vaishno Devi is visited by thousands of pilgrimage on foot or horseback every year. In 2001, about 39,74,540 Indian pilgrims visited Vaishno Devi temple. The number of Indian pilgrims who visited Amarnath in Kashmir had gone up to 1,19,037 in 2001.

Himachal Pradesh

Physiography



Himachal Pradesh lies between the latitudes $30^{\circ} 23' - 33^{\circ} 13' N$ and longitudes $75^{\circ} 43' - 79^{\circ} 4' E$. The state is bounded by Uttaranchal on the southeast, Tibet on the east, Punjab on the west and southwest, Haryana on south and Jammu & Kashmir on the north. It is situated in the northwest corner of the India; right in the lap of Himalayan ranges. The altitudinal variation ranges between 460 meters to 6,600 meters above mean sea level. The state is divided into three zones – the Siwaliks or the outer Himalaya, the low mountains which have less altitude in comparison to great mountains in the middle, and the zone of the Zaskar (high peaks of Himalaya). Many parts of this state are snow bound from December to April.

Numerous passes and glaciers are found in this state. Most important rivers of this state are – Chenab (Chandrabhaga), Ravi (Iravati), Sutlej (Shatadru), Beas (Vipasa) and Yamuna (Jamuna). The Chenab flows 122 km inside Himachal Pradesh before it enters Jammu & Kashmir. Yamuna has a catchments area of $2,320 \text{ km}^2$ in Himachal Pradesh. The climate of northern part or the glacial region of this state is almost cool throughout the year. In winter, snowfall continues until March and could be as high as three meters on the average. The southern part has similarity with the plains and varies from hot to sub-humid. The state experiences cold season from October to middle of March, hot seasons from April to June, and rainy season begins from July and goes upto September.

Himachal Pradesh at a glance

| | |
|---|--|
| Geographical Area | 55,673 km^2 |
| Capital | Shimla |
| Number of districts | 12 |
| Population (2001) | 6,077,248 [Males: 30,85,256; Females: 29,91,992] |
| Major language | Hindi and Pahari |
| Status | Ranks 17 th in area and 20 th in population in India; 3 rd in area as well as population among the IHR states |
| Major rivers | Chenab, Ravi, Beas, Sutlej and Yamuna |
| Forest cover (2001) | 25.79% of total geographical area |
| National parks | Pin Valley, Greater Himalayan National Park |
| Major wildlife sanctuaries | Dhauladhar, Kibber, Kugti, Sangla, Pong lake, Nargu, Rupi Bhaba |
| Rural population (2001) | 90.21% |
| Number of towns and villages including un-inhabited villages (2001) | 57 and 20,118 |
| Agricultural land (2001) | 14.5% of total geographical area |
| Per capita income (NSDP) (2000-01) | Rs. 10942/- (quick estimate) (at 1993-94 prices). |
| Population density (2001) | 109/ km^2 |

| | |
|-------------------------------------|---|
| Birth rate (2000) | 22.1/thousand |
| Death rate (2000) | 7.2/thousand |
| Infant mortality rate | 52/thousand [#] |
| Literacy rate (2001) | 75.91% [Male: 86.02%; Females: 68.08%] |
| Sex ratio (2001) | 970 (females per 1000 males) |
| Schedule Castes and Schedule Tribes | 24.72% and 4.02% of total population respectively |
| Number of Schedule Castes | 56 |
| Number of Schedule Tribes | 8 |
| Major tribal communities | Bhot or Bodh, Gaddi, Gujjar, Jad, Kinnara, Lahaula, Pangwala, Swangla |
| Major source of occupation | Agriculture (75% of total occupation) |
| Major industries | Agro-horticulture, herbal, wool, sericulture and electronics |

[#]Provisional figure of 2002 from SRS, Office of the Registrar General of India, Ministry of Home Affairs.

Districts of Himachal Pradesh

| Code-Districts | Area (km ²) | Population 2001 | Headquarter |
|----------------------|-------------------------|-----------------|-------------|
| 15. Chamba | 6,528 | 4,60,499 | Chamba |
| 16. Lahaul and Spiti | 13,835 | 33,224 | Keylong |
| 17. Kullu | 5,503 | 3,79,865 | Kullu |
| 18. Kangra | 5,739 | 13,38,536 | Dharamasala |
| 19. Hamirpur | 1,118 | 4,12,009 | Hamirpur |
| 20. Una | 1,540 | 4,47,967 | Una |
| 21. Bilaspur | 1,167 | 3,40,735 | Bilaspur |
| 22. Mandi | 3,950 | 9,00,987 | Mandi |
| 23. Shimla | 5,131 | 7,21,745 | Shimla |
| 24. Solan | 1,936 | 4,99,380 | Solan |
| 25. Kinnaur | 6,401 | 83,950 | Reckong Peo |
| 26. Sirmaur | 2,825 | 4,58,351 | Nahan |

Economy

Agriculture

Agriculture is the mainstay of more than 75% of the people in the Himachal Pradesh. Most of the farmers (about 83.7%) belong to small and marginal category. Major food crops are - rice, wheat, jowar, bajra and potato, etc. Total food grains production reached 1,437 thousand tonnes in 2001-02. Diverse agro-climatic conditions afford excellent opportunities for horticulture and cash crops. Fruit cultivation is dominated by apple; Himachal's apples are world famous. Fruit production for the year 2001-02 was 216.30 thousand tonnes. Vegetables constitute a major part in the agriculture of Himachal Pradesh. Potato is the major one and large scale expansion of mushroom cultivation has been undertaken in the recent past. Farm activities are being supplemented by improving milch cattle through a cross-breeding programme.

Industry

Agro-horticulture, herbal, wool, sericulture and electronics are the major industries in the state. This state has adopted a new industrial policy. Priority is given to the above mentioned industries in the new policy. Small-scale village based industries play important role in employment generation. In small scale sector, microscopes, watch parts, thermometers, hospital and heating equipments are being manufactured whereas the village

industry sector comprises sheep-rearing, wood carving, blacksmithy, spinning, weaving, leather tanning, pottery, handloom, handicrafts and bamboo crafts. Handloom and sericulture are the most important village industries. In 2001-02, there were 65,099 handloom workers. As on 31st March 2002, there were 17,740 small scale industries in the state. One export promotion industrial park is developed in Baddi and one electronics complex is being developed in Shoghi near Shimla. Fruit processing is also an important component in the industrial development of the state. One of the biggest fruit processing plants in Asia at Parwanoo is in operation in the state. Tea is grown in Kangra and Mandi districts. As on December 2000, there were 2,325 ha area under tea cultivation. There are three big cement plants in the state. Besides these, there are many mineral based industries like stone crusher, calcium carbonate units and hydrated lime units, etc.

Mines and minerals

The state has considerable mineral resources, which include rock salt, limestone, gypsum and silica-sand. Traces of iron, gold, lignite, pyrite, natural gas and slates have been found in some districts like Bilaspur, Kangra, Mandi and Solan.

Infrastructure

Irrigation

One fifth of the net sown area is irrigated in Himachal Pradesh. In spite of limited scope for major and medium irrigation projects, efforts have been made to bring more cultivated land under irrigation. Shahnehar and Bhabour Sahib irrigation projects are the milestones in this direction besides Sidhata irrigation projects. As on 1998-99, net irrigated area was 103 thousand ha and gross irrigated area was 183 thousand ha in Himachal Pradesh.

Power

The state is endowed with enormous hydel potential of 21,244 MW. All the inhabited villages of the state were electrified by the end of June 1988. The state, with limited resources, has commissioned a number of hydroprojects namely Bassi (60 MW), Binwa (6 MW), Andbra (16.95 MW), Bhaba-Sanjay Vidyut Pariyojna (120 MW), Gaj (10.5 MW), Baner (12 MW) and Nogli (2.5 MW), etc. An agreement has also been signed with NHPC for Parbati project (2051 MW). Naptha Jhakri Hydro Electric Project (1,500 MW) is being executed jointly by the State government and Central government. Chamera Stage II (300 MW) is one of the greatest achievements. The state government has taken to selective organizations for speedy exploitation of its hydel potential. The private sector projects are Baspa Stage II (300 MW), UHL Stage III (100 MW), Hibra (231 MW), Dhamwari Suna (70 MW), Karchham Wangtoo (1000 MW), Neugal (15 MW), Allain Duhangan (192 MW) and Malana (86 MW). As on October 2002, power generating capacity of the state was 664.8 MW.

Transport

Roadways: There were 1,188 km of national highways, 3,682 km of state highways, 20,772 km of major district roads and 560 village roads, as on February 2002, in the state.

Railways: The state has two narrow/meter gauge railway lines running from Pathankot to Joginder Nagar and Kalka to Shimla. Broad gauge line from Nangal to Talwara is under

construction and commissioned upto Una. Survey works is in progress in Bhanupalli-Bilaspur-Beri region for broad gauge lines. Total length of rail tracks was 269 km in 2000-01.

Aviation: The state is air linked via Chandigarh. Himachal Pradesh has three airports – Jubbarhatti (Shimla), Bhuntar (Kullu Valley) and Gaggal (Kangra). The construction works of another airport in Chamba district is in progress. There are 12 helipads in different parts of the state.

Health

Himachal Pradesh had 63 hospitals and 173 dispensaries as on January 1998. It had also 312 primary health centres (PHCs) as on July 2000.

Education

According to 2001 Census, literacy in Himachal Pradesh was 75.91% against the national average of 65.38 %. The male literacy was 86.02% and the female literacy was 68.08 % against the national average of 75.85% and 54.16%, respectively. In higher education, the state is having 4 universities besides one higher technological institute at Hamirpur.

Telecommunication

As on January 2003, there were 4,74,543 telephone connections and 16,585 village public telephones provided by Bharat Sanchar Nigam Limited (BSNL) in the state. Similarly, there were 50,282 cellular phone subscribers in Himachal Pradesh.

Tourism

Tourism is emerging as a major industry in Himachal Pradesh. This state has a number of beautiful scenic places, rivers, rivulets, lakes and parks apart from famed mountains to attract the tourists. After the threat of terrorism in Jammu & Kashmir, a large number of tourists moved towards this state. Main tourist places are - Shimla, Palampur, Dharamsala, Kullu-Manali and Chamba-Dalhousie. The Chamba district has been christened as the Switzerland of Himachal Pradesh. Main pilgrim centres are - Bhima Kali temples, Sarahan, Hatkoti, Jwalajee, Chamunda Devi, Chintpurni, Renuka, Rewalsar, Deoth Siddh and Naina Devi. The State Tourism Development Board developed many tourist attractions like resorts, water sports complexes and hang-gliding, etc. The hang-gliding competition at Kangra valley, Khajjar resort at Chamba district and the water sports complex of Solang Nallah are very popular in this state. Himachal Pradesh has a number of hotels not only in Shimla but also at other places. In February 2002, there were 19 Indian Tourism Department Organization hotels and 520 rooms were available in these hotels. In 2001, about 52,11,772 Indian tourists and 1,35,760 foreign tourists visited this state.

Uttaranchal



Physiography

Uttarakhand is located between $28^{\circ} 43' - 31^{\circ} 27' N$ latitudes and $77^{\circ} 34' - 81^{\circ} 02' E$ longitudes. The river Tons separates the state from Himachal Pradesh in the north-west, whereas the river Kali separates it from Nepal in the east. The greater Himalaya is the northern boundary of the state and is also the international boarder with China (Tibet). Foot-hills in the south are bounded by Uttar Pradesh. Starting from the foot hills in the south, the state extends upto the snow-clad peaks of the *Himadri* making the Indo-Tibetan boundary. The region, being situated centrally in the long sweep of the Himalaya, forms a transitional zone between the per-humid eastern and the dry to sub-humid western Himalaya. Uttarakhand became the 27th state of the Republic of India on 9 November 2000. Historically, Uttarakhand is believed to be the land where Vedas and the Shastras were composed and the great epic, the Mahabharata, was written.

The average annual rainfall of the state, as recorded in 1999, is 1,079 mm. With an altitudinal variation ranging from 200m to more than 8,000m above mean sea level, the state comprises of five lithotectonically and physiographically distinct subdivisions namely, the outer Himalaya comprising Tarai and Bhabhar, sub-Himalayan belt of the Siwaliks, the lesser Himalaya, the great Himalaya, and the trans-Himalaya or the Tethys. The climate of the state is quite harsh particularly in winter when temperature goes occasionally below freezing point in many of the subdivisions of the state.

Uttarakhand at a glance

| | |
|----------------------------|---|
| Area (km ²) | 53,483 |
| Capital (provisional) | Dehradun |
| Number of districts | 13 |
| Population (2001) | 84,79,562 [Males: 43,16,401; Females: 41,63,101] |
| Major language | Hindi, Garhwali and Kumauni |
| Status | Rank 18 th in area and 19 th in population in India; 4 th in area and 2 nd in population among the IHR states |
| Major rivers | Ganga, Yamuna, Saraju, Kali |
| Forest cover (2001) | 44.76% of total geographical area |
| National parks | Gangotri, Nanda Devi, Rajaji, Corbett, Govind, Valley of Flowers |
| Major wildlife sanctuaries | Askot, Kedarnath, Sonanadi, Binsar, Govind Pashu Vihar |
| Rural population (2001) | 74.41% of the total population |

| | |
|--|--|
| No. of towns and villages including un-inhabited villages (2001) | 87 and 16,826 |
| Agricultural land (2001) | 14.25% of total geographical area |
| Per capita income (1999-2000) | Rs. 12,000 /- |
| Population density (2001) | 159/km ² |
| Birth rate (2000) | 20.2/thousand |
| Death rate (2000) | 6.9/thousand |
| Infant mortality rate | 41/thousand [#] |
| Literacy rate (2001) | 72.28% [Male: 84.01%; Female: 60.26%] |
| Sex ratio (2001) | 964 (females per 1000 males) |
| Schedule Castes/Schedule Tribes | 17.87% and 3.02% of total population respectively |
| Number of Schedule Castes | 66 |
| Number of Schedule Tribes | 5 |
| Major tribal communities | Tharu, Buksa, Bhotia, Jaunsri and Raji |
| Major source of occupation | Agriculture, forestry |
| Major industries | Tourism, medicinal herb, handicrafts, handloom, agro-based industries, tea |

[#]Provisional figure of 2002 from SRS, Office of the Registrar General of India, Ministry of Home Affairs.

Districts of Uttarakhand

| Code-Districts | Area (km ²) | Population (2001) | Headquarter |
|-----------------------|-------------------------|-------------------|-------------|
| 27. Uttarkashi | 8,016 | 2,94,179 | Uttarkashi |
| 28. Dehradun | 3,088 | 12,79,083 | Dehradun |
| 29. Tehri Garhwal | 4,080 | 6,04,608 | New Tehri |
| 30. Chamoli | 7,614 | 3,69,198 | Gopeshwar |
| 31. Pauri Garhwal | 5,400 | 6,96,851 | Pauri |
| 32. Almora | 3,083 | 6,30,446 | Almora |
| 33. Pithoragarh | 7,100 | 4,62,149 | Pithoragarh |
| 34. Nainital | 3,860 | 7,62,912 | Nainital |
| 35. Udham Singh Nagar | 2,908 | 12,34,548 | Rudrapur |
| 36. Champawat | 1,781 | 2,24,461 | Champawat |
| 37. Bageshwar | 2,302 | 2,49,453 | Bageshwar |
| 38. Rudrapur | 1,891 | 2,27,461 | Rudrapur |
| 39. Haridwar | 2,360 | 14,44,213 | Haridwar |

Economy

Agriculture

Agriculture is the major livelihood option for the people of the state as it engages more than 52% of the total main workers. Agriculture in the state is an integrated system comprising forests and livestock. Forests and net area cultivated consist of about 62% and 14.2% of the total reporting area of the state, respectively. Net area irrigated consists about 43.72% of the net cultivated area (Directorate of Statistics, Uttarakhand, 2002-2003).

As on 1999-2000, area under cereals, pulses and oil seeds was - 955.74, 32.02 and 24.26 thousand ha, respectively. Rice, wheat and finger millet (Mandua) are the principal

crops of the state. Among other crops, sugarcane and potato account for 129.61 thousand ha in the state. The other cash crops of the state are Rajma, Amaranthus, etc.

Industry

There were over 37 thousand small scale industries, including *Khadi Gramodyog*, employing over 1 lakh and 28 thousand persons in the state as on 2002-03. Hydropower, tourism, tea, forest products such as medicinal herbs and spices are the potential areas of growth in the state under industrial sector.

SIDCUL (State Industrial Development Corporation of Uttaranchal) has established seven industrial estates in the periphery of the state. Tehri Dam on the Bagirathi-Bhilangana rivers (which was conceived in 1953) has reached the stage of completion. Besides this, dozens of hydroelectric dams are being built in the upper reaches of the state.

Infrastructure

Transport

Roadways : As on February 2002, there were 1,093 km of national highways in the state.

Railways: Total length of railway tracks of the state in the year 2000-01 was 356 km. Trains originate from Rishikesh, Dehradun, Haridwar, Kotdwar (in Northern Railways), and Kathgodam, Lal kuan (in North East Railways) of the state.

Aviation: Jolly Grant (Dehradun) and Pantnagar (Udham Singh Nagar) are two air-links in the state. Gauchar (Chamoli) and Naini Saini (Pithoragarh) are other air-links, which are underway in the state.

Education

The literacy rate in Uttaranchal is higher than the national literacy rate. According to 2001 Census, among 72.28 % literates in the state, the break-up for males and females are - 84.01 and 60.26%, respectively. In March 2002, there were 8 Jawahar Navodayas and 32 Kendriya Vidyalayas located in the Uttaranchal. In 2002-03, there were 13,796 junior basic schools, 3,487 senior basic schools (secondary schools), 1,593 intermediate colleges, and 74 degree colleges in the state. In higher education, the state has the record of highest number of educational/scientific institutions among all the states of the Indian Himalayan region. The state has 7 universities/deemed universities located at Nainital, Pantnagar, Srinagar, Haridwar, Dehradun and Roorkee.

Health

As on 2002-03, there were 19 district level hospitals, 228 primary health centres (PHCs), 36 community health centres, and 325 government allopathic hospitals in the state. There are over 7 thousand beds in government Allopathic hospital/dispensaries. Besides these, 467 Ayurvedic, 3 Unani and 66 Homeopathic hospital/dispensaries, 18 Tuberculosis (TB) hospitals/clinics and 3 Leprosy clinics are also functioning in the state.

Telecommunication

As on January 2003, there were 3,50,936 telephone connections and 11,597 number of village public telephones (VPTs) provided by Bharat Sanchar Nigam Limited (BSNL) in the state.

Tourism

Uttaranchal, a paradise for tourists, is cradled in the awesome beauty and calm serenity of the Himalaya. Uttaranchal, also titled as '*Devbhoomi*' (the land of Gods), has attracted tourists and pilgrims from world over since time immemorial. Sacred pilgrimages of different religions; including Haridwar and the world famous Badrinath, Kedarnath, Gangotri, Yamunotri, and Sikh pilgrimage of Hemkund, Lokpal, Nanakmatta and Meetha Reetha Sahib and Piran Kaliyar; have drawn pilgrims and seekers for spiritual fulfillment. Badrinath shrine is one among the *Char* (four) *Dhams* (shrines) of the country. The rich cultural traditions, the rare natural beauty and the cool and invigorating climate of the state have been its main attractions. The holy Ganga is highly worshipped at different places in the state. The other famous tourist destinations of the state are – Deveprayag, Rishikesh, Mussorrie, Auli, Nainital, Ranikhet, Jageshwar and Almora. River rafting in Alaknanda is also among other attractions in the state.

Sikkim



Physiography

Sikkim is situated in the eastern Himalaya between $88^{\circ} 03' - 88^{\circ} 57'$ E longitude and $27^{\circ} 03' - 28^{\circ} 07'$ N latitude. It is a small mountain state bounded by Tibet on north, Nepal on west, Bhutan on east and West Bengal on south. India's highest mountain peak Kangchendzonga (8,579 m), which is world's third highest peak, rises from this state. The state extends to about 115 km from north to south and 65 km from west to east. Most of the areas of the state are snow covered throughout the year. Its unique geographical position, varied topography and high annual rainfall make the state a treasure house of flowering plants.

The vegetation of tropical forests occurring up to 900m consists of moist deciduous to semi-evergreen tree species. Sikkim is famous for its orchids and harbours about 45% of orchid species found in the country. Tista is the main river of the state, which divides the state into north and south. The other rivers are - Lahen, Lachung, Rangit and Rangpo. The climate of this state varies with the altitudes. The upper region is extremely cold but the southern part is humid; similar to neighboring state West Bengal. Because of its elevations, the rainfall in the state varies from 500 to 5,000 mm per year. Though Arctic conditions are quite common in the higher elevations of the state, the temperature varies between as high as 30° to below 0° C with relative humidity up to 95%.

Sikkim at a glance

| | |
|---|--|
| Geographical area (km ²) | 7,096 |
| Capital | Gangtok |
| Number of districts | 4 |
| Population (2001) | 5,40,493 [Males: 2,88,217; Females: 2,52,276] |
| Major language | Lepcha, Bhutia, Nepali, Hindi and Limbu |
| Status | Ranks 27 th in area and 28 th in population in India; 11 th in area and the lowest in population among the IHR states |
| Major rivers | Tista |
| Forest cover (2001) | 45% of total geographical area |
| National park | Kangchendzonga |
| Major wildlife sanctuaries | Barsey Rhododendron, Fambong Lho |
| Rural population (2001) | 88.9% of total population |
| Number of towns and villages including un-inhabited villages (2001) | 9 and 452 |
| Agricultural land (2001) | 16.1% of total geographical area |
| Per capita income (NSDP) (1999-2000) | Rs. 9816/- (at 1993-94 prices) |
| Population density (2001) | 76/km ² |
| Birth rate (2000) | 21.8/thousand |

| | |
|-------------------------------------|---|
| Death rate (2000) | 5.7/thousand |
| Infant mortality rate | 34/thousand [#] |
| Literacy rate (2001) | 69.68% [Male: 76.73%; Female: 61.46%] |
| Sex ratio (2001) | 875 (females per 1000 males) |
| Schedule Castes and Schedule Tribes | 5.02% and 20.6% of total population respectively |
| Major tribal communities | Bhutia (including Chumbipa, Dophapa, Dukpa, Kagatcy, Sherpa, Tromopa, Yolmo) and Lepcha |
| Number of Schedule Castes | 4 |
| Number of Schedule Tribes | 2 |
| Major sources of occupation | Agriculture |
| Major industries | Handloom, handicrafts, tea and watches |

[#]Provisional figure of 2002 from SRS, Office of the Registrar General of India, Ministry of Home Affairs.

Districts of Sikkim

| Code-Districts | Area (km ²) | Population (2001) | Headquarter |
|----------------|-------------------------|-------------------|-------------|
| 40. North | 4,226 | 41,023 | Mangan |
| 41. West | 1,166 | 1,23,174 | Gyalshing |
| 42. South | 750 | 1,31,506 | Namchi |
| 43. East | 954 | 2,44,790 | Gangtok |

Economy

Agriculture

Agriculture is the main source of occupation of the state. Major food crops are – maize, rice, wheat and potato, etc. Cash crops are – ginger, cardamom, orange, tea and off-season vegetables. This state dominates in large cardamom production. Animal husbandry is very important in this state. Presently, emphasis is being given on development of commercial and horticulture crops and floriculture.

Industry

Sikkim is an industrially backward state. In order to develop industrial ambiance, the state has formulated new industrial policy and department of industries has launched different promotional schemes recently. Main industries of the state are – handloom and handicrafts, tea, juices and jams, biscuits and other bakery products, beer, matches, washing soap, electric cables, watches, leather goods, and industrial jewels. Sikkim Time Corporation (SITCO), owned by Sikkim government in collaboration with HMT, assembles watches, manufactures digital watches and M.I.C. chips. As on 31st March 2002, there were about 342 small scale industries in the state.

Infrastructure

Irrigation

During the Seventh Plan period (1985-90), many new irrigation schemes for providing assured water, both for kharif and rabi cropping, were taken up in the state. An additional irrigation potential of 6,359 ha was initiated and a corresponding 5,530 ha of potential was utilized.

Power

Total power potential of the state is 8,000 MW. In the Eighth Plan period, two new micro-hydel power projects were taken up in the state along with Lachung hydel project of 200 KW. The state's installed capacity of power utilities, as on December 2001, was 155.90 MW out of which 92.90 MW was contributed by the hydro-power. Besides above, Central Government undertakings generated power of about 118.00 MW. As on October 2002, power generating capacity of the state was 60.8 MW.

Transport

Roadways: As on February 2002, there were 62 km of national highways, 186 km of state highways and 1,502 km of major district roads in the state.

Railways: The state has no rail-heads; the nearest railway stations are the New Jalpaiguri and Siliguri, which are located in West Bengal.

Aviation: Due to high altitudes and mountain peaks there is no airport in the state. Nearest airport is at Bagdogra in West Bengal connected to Delhi, Kolkata and Guwahati.

Education

According to 2001 Census, among 69.68% literates in the state, the break-up for male and female literacy percentages were 76.73 and 61.46 %, respectively. In 2000-01, there were 1 university (at Tadong), 2 graduate and post-graduate colleges, 33 higher-secondary schools, 77 secondary schools and 501 primary schools in Sikkim.

Health

As on January 1998, Sikkim had 1 hospital and 147 dispensaries. The state had also 24 primary health centres (PHCs) as on July 2000.

Telecommunication

As on January 2003, there were 36,820 telephone connections and 374 number of village public telephones (VPTs) provided by Bharat Sanchar Nigam Limited (BSNL) in the state.

Tourism

Gangtok, the state capital, is the main tourist attraction. Besides, there are important tourists places like Buddhist temple at Yumthang, natural garden at Bankhim, Changu Lake, the monasteries at Dubdi, Rumtek, Tsomgo, Phodong, Dzungri, Varsey and Tashiding, etc. The state has much more potential for the development of tourism and efforts are being made in this direction.

West Bengal hills



Physiography

West Bengal state of the country is comprised of 19 districts. Only Darjeeling district forms the hill region of West Bengal under Eastern Himalaya. The eastern frontier of the hill region lies along the rivers Tista and Rangit; beyond it is Rishi-La and Bhutan. The lower regions of the Labyrinth hilly forest-clad ridges have been cleared for the cultivation of world famous Darjeeling tea. Darjeeling district lies between 26° 31' – 27° 13' N latitudes and 87° 59'– 88° 53' E longitudes.

The region is located in very strategic position of North Bengal, which touches 3 international borders, viz. Nepal in west, Bhutan in north-east, and Bangladesh in south-east; its northern and southern boundaries touch Indian states Sikkim, West Bengal and Bihar, respectively. The altitude of the region varies from 91m in the foot hills of West Bengal, the 'Tarai' region in the south, to 3,657m high mountain in the north. The region receives plenty of rains and has a wide range of climates from tropical to sub-alpine. The forests in and around Darjeeling have delightful flora and fauna. Four thousand species of flowering plants, three hundred varieties of ferns including tree ferns and numerous types of flowerless plants, mosses, algae, fungi, birches, and of course, the prize orchids, wild and cultivated, are found in Darjeeling.

West Bengal hill at a glance

| | |
|--------------------------------------|--|
| Geographical area (km ²) | 3,149 |
| Population (2001) | 16,05,900 [Males: 8,26,334; Females: 7,79,566] |
| Language | Nepali, Bengali, Hindi |
| Status | Smallest in terms of area and 8 th position in terms of population among the IHR states/regions |
| Major rivers | Tista, Jaldhaka, Mahanadi, Balasan, Mechi, and Rangit |
| Forest cover (2001) | 69.74% |
| National parks | Neora Valley, Singhalila |
| Major wildlife sanctuaries | Mahananda, Senchal |
| Rural population (2001) | 67.56% of total population |
| No. of inhabited village | 620 |
| Agricultural land (2001) | 43.5% of total geographical area |
| Population density (2001) | 510/ km ² |
| Literacy rate (2001) | 72.87% [Male: 81.28%; Female: 63.92%] |
| Sex ratio (2001) | 943 (females per 1000 males) |
| Schedule Castes and Schedule Tribes | 16.09% and 12.69% of total population respectively |
| Major tribal communities of WB | Baiga, Bhutia, Birhor, Chakma, Garo, Gond, Ho, Lepcha, Magh |
| Major source of occupation | Agriculture |
| Major industries | Tea, tourism |

Kolkata, the capital of West Bengal, is located at a distance of about 665km from Darjeeling.

Economy

Agriculture

Tea, timber and tourism are the three main constituents of the economy of the region. Rice and maize are the main crops produced along with orange and cardamom; the two major cash crops of the region. The region produces the world's best aromatic tea over 10 million kgs annually. There are about 86 gardens producing 'Darjeeling Tea' on a total area of about 19,000 hectares.

Industry

There are no large scale industries in Darjeeling. However, small scale and cottage industries have been flourished all over the region. The Darjeeling tea industry at present employs over 52 thousand people on a permanent basis; moreover, about 15,000 additional persons are engaged during the plucking season that lasts from March to November each year. A unique feature of this work force is that more than 60% are women and the employment is on a family basis. Plantation, agro-industries and hotels are other industries in the region.

Infrastructure

Irrigation

Though more than 43.5% of the total geographical area in the region is cultivated, only about 4.2% is irrigated. No major irrigation project is operating in the region. Ground water and other sources of water are also used for minor irrigation.

Transport

The region is well connected by road, rail and air with major Indian cities. National highway 37 passes through the region. Other national highways (30, 33, 34) connect Siliguri, the major town of Darjeeling district, with other parts of the country. New Jalpaiguri on north-east frontier railway connects the region with all major cities in India. A narrow-gauge rail from New Jalpaiguri, connecting the district headquarters Darjeeling, is famous for Darjeeling Himalayan railways. Bagdogra (which is about 90 km far from Darjeeling) is air linked to Kolkata, Guwahati and Delhi.

Education

Darjeeling has been the home-ground for education from the early rule of the British people. Since then, it is the home of many boarding schools and colleges. It is also the seat of the University of North Bengal with a number of affiliated colleges including a medical school in the region. Among 72.87% literates, male literacy is 81.28 % and that of female is 63.92%.

Tourism

Darjeeling, which is internationally acclaimed as one of the best hill stations in the world, generates sizeable revenue from tourism. Sanatorium, Mall, Observatory Hill, Mahakaal Temple, Himalayan Mountaineering Institute, Lloyd Botanical Garden, Darjeeling Zoo, Natural History Museum, Race Course and Tiger Hill are major tourist attractions in Darjeeling. Kurseong, Kalimpong, Mirik, Pedong, Phalut and Sandakphu are other tourist attractions in the region.

Meghalaya



Physiography

Meghalaya lies between 25° 1' – 26° 5' N latitudes and 85° 49' – 92° 52' E longitudes. The state is bounded by Assam on its east, north and north-west and by Bangladesh on the south and south-west. The Khasi hills and Jaintia hills, which form the central and eastern parts of Meghalaya, respectively, are imposing plateaus with rolling grasslands, hills and river valleys.

The southern face of the plateaus is marked by deep gorges and abrupt slopes. Water falls rush down steep slopes and carve deep valleys through which swift flowing rivers descend to the plains. At the foot of these slopes, a narrow strip of plain land runs along the international border with Bangladesh. The state has a number of rivers but none of them are navigable; the major rivers are Ildek, Dudnai, Krishnai, Jinari, Didak, Jinjiram, Mahadeo, Moheshkali and Someshwari. The climate of the central and eastern Meghalaya is conducive whereas in the western Meghalaya, except for the winter, it becomes oppressive. Meghalaya is well known for its clouds and rainfall. The Mawsynram village receives the world's highest rainfall (earlier it was recorded at Cherrapunji in the state) on the average of about 750 cm.

Meghalaya at a glance

| | |
|---|--|
| Geographical area (km ²) | 22,429 |
| Capital | Shillong |
| Number of districts | 7 |
| Population (2001) | 23,06,069 [Males: 11,67,840; Females: 11,38,229] |
| Major language | Khasi, Garo and English |
| Status | Ranks 22 nd in area and 23 rd in population in India; 5 th in area and 6 th in population among the IHR states |
| Major rivers | Ildek, Dudnai, Krishnai, Jinari, Didak, Jinjiram, Mahadeo, Moheshkali, Someshwari |
| Forest cover (2001) | 69.48% of total geographical area |
| National parks | Nokrek, Balphakram |
| Major wildlife sanctuaries | Nongkhyllum, Siju |
| Rural population (2001) | 80.37% of total population |
| Number of towns and villages including un-inhabited villages (2001) | 16 and 6,034 |
| Agricultural land (2001) | 48.2% of total geographical area |
| Per capita income (NSDP) (2001-02) | Rs. 8827/- (advanced estimate) (at 1993-94 prices) |
| Population density (2001) | 103/km ² |
| Birth rate (2000) | 28.5/thousand |

| | |
|-------------------------------------|---|
| Death rate (2000) | 9.2/thousand |
| Infant mortality rate | 61/thousand [#] |
| Literacy rate (2001) | 63.31% [Male: 66.14%; Female: 60.41%] |
| Sex ratio (2001) | 975 (females per 1000 males) |
| Schedule Castes and Schedule Tribes | 0.48% and 85.94% of total population respectively |
| Number of Schedule Castes | 16 |
| Number of Schedule Tribes | 17 |
| Major tribal communities | Chakma, Dimasa, Garo, Hajong, Hmar, Khasi (Jaintia, Pnar, Bhoi, Lyngngam, War, Synteng) Kuki (with more than forty sub-tribes), Lakher, Man, Mikir, Pawl, Synteng, Koch, Raba and Boro kachari |
| Major Sources of Income | Agriculture (80% of the total population depend on it) |
| Major industries | Cement, small-scale industries |

[#]Provisional figure of 2002 from SRS, Office of the Registrar General of India, Ministry of Home Affairs.

Districts of Meghalaya

| Code-Districts | Area (km ²) | Population (2001) | Headquarter |
|----------------------|-------------------------|-------------------|--------------|
| 45. West Garo Hills | 3,714 | 5,15,813 | Tura |
| 46. East Garo Hills | 2,603 | 2,47,555 | Williamnagar |
| 47. South Garo Hills | 1,850 | 99,105 | Baghmara |
| 48. West Khasi Hills | 5,247 | 2,94,115 | Nongstoin |
| 49. East Khasi Hills | 2,748 | 6,60,994 | Shillong |
| 50. Ri-Bhoi | 2,448 | 1,92,795 | Nongpoh |
| 51. Jaintia Hills | 3,819 | 2,95,692 | Jowai |

Economy

Agriculture

Agriculture is the main source of occupation of the people of the state. Nearly 80% of the state's population depend primarily on agriculture for their livelihood. *Jhum* cultivation is still practiced in this state. Rice and maize are the main food crops. The cash crops of the state are - potato, turmeric, ginger, black pepper, areca nut, betel vine, tapioca, short staple cotton, jute, mesta, mustard and rape seed. The agro-climatic variations of the state support the horticulture production. The state is renowned for its various types of oranges, pineapple, banana, jackfruit and temperate fruits like plum and peaches.

Industry

Meghalaya is an industrially backward state. The only public sector cement factory of the state is located at Cherrapunjee. Besides, there are mini cement plants at Damas and Sutnga. The Tantalum Capacitor Unit at Umiam-Khawan is in production. Besides, there are a number of small-scale industries like bakeries, furniture making, steel fabrication, tyre retreading and spices, etc. The Meghalaya Industrial Development Corporation (MIDC) is assisting the industrial units by way of term loans and by participating in equity capital.

As per Annual Survey of Industries (1999-2000), Meghalaya was having 27 factories employing 1,001 persons. The total investment was Rs. 3,191 lakh and net income generated was of Rs. 377 lakh. As on 31st March 2002, there were 3,029 small scale industries in the state.

Mines and minerals

Meghalaya has rich mineral resources like limestone and coal. The quality of the coal is not good due to high sulphur content. Other mineral deposits are - silimanite, feldspar, glass sand, dolomite, fire clay and quartz, etc.

Infrastructure

Irrigation

The irrigation potential is much larger than the present achievement. Total estimated irrigated potential in the state is 2.18 lakh ha both from surface and ground water. As on 1998-99, net irrigated area was 48 thousand ha and gross irrigated area was 55 thousand ha in Meghalaya.

Power

The state's installed capacity of power utilities for the power generation was 258.96 MW; out of which, hydro power accounts for 230.81 MW as on December 2001. Besides, Government of India undertakings generated power of about 70.20 MW. As on October 2002, total power generating capacity of the state was 285.96 MW.

Transport

Roadways: There were 717 km of national highways, 991 km of state highways, 5,416 km of major district roads, and 604 km of village roads, as on February 2002, in the state.

Aviation: Umroi is the only airport of the state and is located 35 km away from the state capital Shillong.

Education

According to 2001 Census, the literacy percentage of the state was 63.31%; the male literacy was 66.14 and the female literacy was 60.41%. In 2000-01, there were 1 university (at Shillong), 33 graduate and post-graduate colleges, 40 higher-secondary schools, 532 secondary schools and 4,685 primary schools in Meghalaya.

Health

Meghalaya had 9 hospitals and 21 dispensaries in January 1998. Eighty five (85) primary health centres (PHCs) were reported to be functioning in July 2000.

Telecommunication

As on January 2003, there were 57,660 telephone connections and 1,642 village public telephones provided by the Bharat Sanchar Nigam Limited (BSNL) in Meghalaya.

Tourism

The entire state is full of lush green vegetation and presents a soothing sight to the people from the plains and to all lovers of nature. Shillong, the state capital, is the largest hill

station in India and is also the most beautiful hill resort in the north-eastern region. It is a place of great interest with its orchids and tree-lined boulevards. Shillong has a number of tourist attractions like Ward's Lake, Lady Hydari Park, Polo Ground, Mini Zoo, Elephant Falls, Shillong peak, the golf course, etc. Cherrapunjee remains a perennial source of interest to the visitors because of its record rainfall. Simsang valley in the Garo hills also delights the tourists.

Assam hills

Physiography



Assam state of the country is comprised of 23 districts. Only two districts, namely North Cachar Hills and Karbi Anglong, form the hill region of Assam under Eastern Himalaya. The hill region lies between 25° 3' – 26° 35' N latitudes and 92° 10' – 93° 50' E longitudes. It is situated at the southern part of Assam and is bounded by Nagaland and Manipur states on the east and Meghalaya on the west. The northern part of the region touches Marigaon, Nagaon, and Golaghat districts of Assam, while southern part is bound by Cachar district of the state. Most of the area is covered by hills. The Thumjang (1,866 m) is the highest peak in Borail range. Other peaks are - Hempeupet (1,748 m) and Singhason (1,360 m). The plain areas consist of valleys of the Jamuna, Kapili and Dhansiri rivers lying in its eastern part.

The forests depict a high amount of landscape heterogeneity promoting greater biodiversity. These forest areas are natural museums of living giant trees, a treasure house of rare, endemic and endangered species and medicinal plants. Due to variation in topography, the hill region experiences change in climate in different parts. Rainfall varies from 2,200 – 2,700 mm and Borail range receives the heaviest rainfall in the region.

Assam hills at a glance

| | |
|--------------------------------------|---|
| Geographical area (km ²) | 15,322 |
| Number of districts | 2 |
| Population (2001) | 9,98,509 [Males: 5,21,498; Females: 4,77,011] |
| Major language | Assamese |
| Status | Ranks 9 th in area and 10 th in population among the IHR states/regions |
| Major rivers | Jamuna, Kapili and Dhansiri, Dehangi, Diyung, Jatinga, Jenam, Mahur, Langting |
| Forest cover (2001) | 79.82% |
| Wildlife sanctuary | Garampani |
| Rural population (2001) | 84.89% of total population |
| Number of villages (2001) | 3,172 |
| Agricultural land (2001) | 10.5% of total geographical area |
| Population density (2001) | 65/km ² |
| Literacy rate (2001) | 60.68% [Male: 69.75%; Female: 50.65%] |
| Sex ratio (2001) | 915 (females per 1000 males) |
| Schedule Castes and Schedule Tribes | 3.29% and 58.26% of total population respectively |
| Major tribal communities of Assam | Chakma, Dimasa, Garo, Hajong, Hmar, Khasi, Kuki and its sub-tribes, Lakher, Mikir, man, Pawl, Synteng |
| Major source of occupation | Agriculture |
| Major industries | Handloom, handicrafts, tea |

Dispur (Guwahati); the capital of Assam is about 260 km from Diphu (Karbi Anglong) and about 368 km from Haflong (North Cachar hills) of Assam hills.

Districts of Assam hills

| Code-Districts | Area (km ²) | Population (2001) | Headquarter |
|------------------------|-------------------------|-------------------|-------------|
| 52. Karbi Anglong | 10432 | 812320 | Diphu |
| 53. North Cachar Hills | 4890 | 186189 | Haflong |

Economy

Agriculture

Entire rural population of this hill region is dependent on agriculture. Different types of agricultural crops are cultivated of which paddy is the main crop. Except for the valleys, the people follow *Jhum* (the traditional shifting cultivation). Some horticultural crops like pineapple, orange, papaya and banana occupy a vital role in uplifting rural economy.

Industry

Cement factories and sawmills are organized private sector industries in the region apart from rubber plantation and tea gardens. Weaving constitutes a major household industry and large areas have been covered by Eri and Mulberry farms. Among state owned Public Sector Undertakings, North Eastern Electric Power Corporation (NEEPCO) has established Kopili Hydro Project at Umrangso. Assam Hills State Industries Development Corporation (AHSIDC) has also established a fruit preservation unit at Jatinga. Some agro-based industries are also being established in the region.

Mines and minerals

China-clay, coal, feldspar and carbonaceous are found in the region. Good quality of limestone, low in magnesia, is suitable for cement manufacturing and is available in the region.

Infrastructure

Power

Besides Kopili Hydro Project at Umrangso, two power projects are also coming up at Amreng (Karbi Anglong Hydro Project) and Bordikharu (Bordikharu Micro Hydel Project). Once operational, power generation in the state will not only solve the power problem in the region but can provide power to the neighboring districts and states.

Transport

National Highways 37 and 39 connect the region to the capitals of neighboring states while internal routes are covered by the State Public Works Department. North-East Frontier railway connects the region to the state capital, Guwahati. There is no air link in the hill region. The nearest airport is at Dimapur, which is 54 km away from Diphu the district headquarter of Karbi Anglong district.

Telecommunication

Number of telecom exchanges operating in Karbi Anglong and North Cachar Hills were 11 and 6, respectively. As on 1997-98, the total number of post offices in the Assam hills was 26.

Tripura



Physiography

Tripura lies between 22° 56' – 24° 32' N latitudes and 90° 09' – 92° 20' E longitudes. It is one of the remotest northeastern states of India and is bounded on three sides by Bangladesh (about 84% international border) and on northeast by Assam and Mizoram. It is strategically situated between the river valleys of Myanmar and Bangladesh. The state has hills and sub-mountains in the central and eastern region. The main rivers of the state are - Gumti, Manu, Dhalai and Khowai. The other rivers are: Juri, Langai, Deo, Surma, Raima, Laogang and Mukari, etc. The state's climate is tropical moist or warm and humid and temperature varies from 10°C to 35°C. The rainfall varies from 1,811 mm (at Sonamura) to 2,855 mm (at Kamalpur) with annual average of 2,100 mm in the state.

Tripura at a glance

| | |
|---|---|
| Geographical area (km ²) | 10,486 |
| Capital | Agartala |
| Number of districts | 4 |
| Population (2001) | 31,91,168 [Males: 16,36,138; Females: 15,55,030] |
| Major language | Bengali and Kakkborak |
| Status | Ranks 26 th in area and 21 st in population in India; 10 th in area and 4 th in population among the IHR states |
| Major rivers | Gumti, Manu, Dhalai, Khowai |
| Forest cover (2001) | 67.38% of total geographical area |
| Major wildlife sanctuaries | Gumti, Trishna |
| Rural population (2001) | 82.98% of the total population |
| Number of towns and villages including un-inhabited villages (2001) | 23 and 870 |
| Agricultural land (2001) | 29.6% of total geographical area |
| Per capita income (NSDP) (2001-02) | Rs. 6813/- (quick estimate) (at 1993-94 prices). |
| Population density (2001) | 304/km ² |
| Birth rate (2000) | 16.5/thousand |
| Death rate (2000) | 5.4/thousand |
| Infant mortality rate | 34/thousand [#] |
| Literacy rate (2001) | 73.66% [Male: 81.47%; Female: 65.41%] |
| Sex ratio (2001) | 950 (females per 1000 males) |
| Schedule Castes and Schedule Tribes | 17.37% and 31.05% of total population respectively |
| Number of Schedule Castes | 32 |
| Number of Schedule Tribes | 19 |
| Major tribal communities | Bhil, Bhutia, Chaima, Chakma, Garoo, Halam, Jamatai, Khasia and Kuki (with more than twenty sub-tribes) |

| | |
|----------------------------|----------------------------|
| Major source of occupation | Agriculture |
| Major industries | Handloom, handicrafts, tea |

#Provisional figure of 2002 from SRS, Office of the Registrar General of India, Ministry of Home Affairs.

Districts of Tripura

| Code-Districts | Area (km ²) | Population (2001) | Headquarter |
|-------------------|-------------------------|-------------------|-------------|
| 54. North Tripura | 2,821 | 5,90,655 | Kailashahar |
| 55. West Tripura | 2,997 | 15,30,531 | Agartala |
| 56. South Tripura | 2,152 | 7,62,565 | Udaipur |
| 57. Dhalai | 2,522 | 3,07,417 | Ambassa |

Economy

Agriculture

The economy of Tripura is primarily agrarian. The primary sector (agriculture) contributes about 64% of total employment in the state and about 48% of the State Domestic Product (SDP). In some tribal areas, there is *Jhum* cultivation but much of the state's agriculture is of the settled type. Main food crops are - rice, wheat, pulses and oilseeds. Cash crops are cotton, tea, sugarcane, fruits and rubber in some parts of the state. The forests yield a considerable amount of bamboo, sal wood, grass, cane and medicinal plants.

Industry

The industry sector in Tripura remained undeveloped so far despite the vast potential. The secondary sector contributes only about 5% of total employment and about 7% of the total income of the state at present. Fruit preservation, tea, handloom and handicrafts are the main industries of the state. Besides, aluminum utensils, PVC pipe and plywood industries are also present in the state. The cane and bamboo works in Tripura are very famous.

Mines & Minerals

The Oil and Natural Gas Commission (ONGC) has done substantial work on discovering oil in the state. There is also a natural gas reserve in the state. Lignite and clay deposits have also been traced at some places.

Infrastructure

Irrigation

Total irrigated area in the state in 1998-99 was 64,665 ha. Various projects and schemes like seasonal bund on the rivers have been launched. Minor irrigation works have been completed in several parts of the state and some are under different stages of completion. It is estimated that about 1.17 lakh ha of land will be brought under the irrigation schemes, out of which 13,000 ha by the medium irrigation projects, 66,000 ha by the minor irrigation projects and 38,000 ha by the ground water potential.

Power

The Gumti hydro-electric power project, Baramura gas-thermal project (16.5 MW), Rukhia gas-thermal power project (8 MW), micro-hydel project at Maharani (1 MW) and Ramchandranagar Thermal Power Plant are the power generating projects of the state. The state's installed capacity, as on December 2001, was 149.46 MW; out of which 47.11 MW

was hydro power. Besides, Central Government Undertakings generated power of about 64.10 MW. As on October 2002, power generating capacity of the state was 199.46 MW.

Transport

Roadways: As on February 2002, there were 400 km of national highways, 136 km of state highways, 5,569 km of major district roads and 7,912 km of village roads in the state.

Railways: Total railway track length of the state in the year 2000-01 was 45 km. Survey work is in progress for extension of railway lines from Agartala to Sarboon.

Aviation: Agartala, the capital city, is air linked with Kolkata, Delhi and Guwahati. Other air-links are - Kailashahar, Kamalpur and Khowai.

Education

Among 73.66% literates in the state, male accounts for 81.47% whereas female literacy is 65.41%. In 2000-01, there was one university, 14 graduate and post-graduate colleges, 226 higher-secondary schools, 403 secondary schools and 2,081 primary schools in Tripura.

Health

Tripura had 29 hospitals and 612 dispensaries in January 1998. As on July 2000, 58 primary health centres (PHCs) were functioning in the state.

Telecommunication

As on January 2003, there were 77,308 telephone connections and 748 number of village public telephones (VPTs) provided by the Bharat Sanchar Nigam Limited (BSNL) in Tripura.

Tourism

Agartala is the main tourist attraction. It has a number of palaces and temples in and around the city. Some of them are Ujjayanta Palace, Kunjaban Palace, Jagannath Temple, Laxmi Narayan Temple, Uma Maheswari Temple. Besides, there are State Museum, Rabindra Kanan and Maharaja Bir Bikram College in Agartala. Fourteen Goddess temple at Old Agartala, Tripura Sundari Temple, Bhuwaneshwari Temple, Brahmakunda, Kamala sagar, Sapahijala Wildlife Sancuatory, Pilak in Belonia, Debtamura, Tirthamukh, Mandirghat, Dumboor Lake, Coconut Island at Dumboor Lake, Udaipur Reserve Forest, Kumarghat and Unakoti are the other tourist centres. Jampuriah hills in the north attract a lot of tourists. The government of Tripura has also set up an advisory committee to boost tourism in the state.

Mizoram



Physiography

Mizoram lies between $21^{\circ} 58' - 24^{\circ} 35' N$ latitudes and $92^{\circ} 15' - 93^{\circ} 29' E$ longitudes. The state is bounded by Tripura and Bangladesh on its west, the Chin hills of Myanmar on its east and south, and by Manipur and Assam on its north. Mizoram is a land of rolling hills, rivers and lakes. As many as 21 hill ranges of different heights run through the length and breadth of the state. The terrain has variegated topography, extremely rugged leaving some plains scattered in the state. Hills in the state extend from north to south with an inclination to be higher in east to the territory and tapering in the north and south. The average height of the hills is about 900 m. Blue Mountain is the highest peak (2,210 m) of the state. Mizoram has an abundance of trees, bushes, plants, shrubs and grasses. There are many rivers in the state and some of them are the Tlawng, Tuirail, Tuiwal, and Koladyne. The climate of the state exhibits a strong seasonal rhythm. Normally the state has four seasons – winter, pre-monsoon, monsoon and retreating monsoon. Annual rainfall varies from a minimum of 100 cm to a maximum of 300 cm with an average of 250 cm. Mizoram has the distinction of having the highest percentage (94.46%) of its total population as scheduled tribe population in the country.

Mizoram at a glance

| | |
|---|---|
| Geographical area (km ²) | 21,081 |
| Capital | Aizawl |
| Number of districts | 8 |
| Population (2001) | 8,91,058 [Males: 4,59,783; Females: 4,31,275] |
| Major language | Mizo and English |
| Status | Ranks 24 th in area and 27 th in population in India; 7 th in area and 11 th in population among IHR states |
| Major rivers | Tlawng, Tuirail, Tuiwal, Koladyne |
| Forest cover (2001) | 82.98% of total geographical area |
| National parks | Murlen, Phowngpui Blue Mountain |
| Major wildlife sanctuaries | Dampa, Langtang, Ngengpui |
| Rural population (2001) | 50.5% of total population |
| Number of towns and villages including un-inhabited villages (2001) | 22 and 817 |
| Agricultural land (2001) | 21.2% of total geographical area |
| Per capita income (1996-97) | Rs.9,570/- (per annum). |
| Population density (2001) | 42/km ² |
| Birth rate (2000) | 16.0/thousand |
| Death rate (2000) | 5.2/thousand |
| Infant mortality rate | 14/thousand [#] |
| Literacy rate (2001) | 88.49% [Male: 90.69%; Female: 86.13%] |

| | |
|-------------------------------------|---|
| Sex ratio (2001) | 938 (females per 1000 males) |
| Schedule Castes and Schedule Tribes | 0.03% and 94.46% of total population respectively |
| Number of Schedule Castes | 16 |
| Number of Schedule Tribes | 14 |
| Major tribal communities | Chakma, Dimasa (Kachari), Garo, Hajong, Hmar, Khasi , Jaintia (including Synteng, Pnar, War, Bhoi or Lyngngam), Kuki (with more than thirty-eight sub-tribes), Lakher, Man, Mizo, Mikir, Pawl, Naga |
| Major sources of occupation | Agriculture (60% of the state's population engaged in it) |
| Major industries | Handloom, handicrafts, agro-based industries, sericulture |

#Provisional figure of 2002 from SRS, Office of the Registrar General of India, Ministry of Home Affairs.

Districts of Mizoram

| Code-Districts | Area (km ²) | Population (2001) | Headquarter |
|----------------|-------------------------|-------------------|-------------|
| 58. Lawngtlai | 2557 | 73,050 | Lawngtlai |
| 59. Saiha | 1400 | 60,823 | Saiha |
| 60. Lunglei | 4538 | 1,37,155 | Lunglei |
| 61. Aizawl | 3576 | 3,39,812 | Aizawl |
| 62. Champai | 3186 | 1,01,389 | Champai |
| 63. Mamit | 3025 | 62313 | Mamit |
| 64. Kolasib | 1383 | 60977 | Kolasib |
| 65. Serchhip | 1422 | 55,539 | Serchhip |

Economy

Agriculture

Agriculture is the main source of occupation of the state. About 60% of the people of Mizoram are engaged in agricultural activities. The *Jhum* is the main pattern of cultivation. Maize and rice are the main food crops. Sugarcane, tapioca, ginger and cotton are major cash crops. Pigs and fowls are reared by many farmers. Exotic varieties and breeds of pigs and fowls have been introduced and have become popular among the villagers. The state has a considerable production of fruits. Orange, lemon, kagzi lime, passion fruits, hatkora, jamir, pineapple and papaya are the main horticulture crops.

Industry

Mizoram is industrially backward. Major industries of the state are agro and forest based industries together with handlooms, handicrafts, electronics, consumer goods industries and sericulture. Various steps have been taken to boost up the food processing industries in the state. Dehydration Plant and Ginger Oil and Oleoresins Plant at Sairang have been completed. Mizo Milling Plant at Khawzawl and Fruit Juice Concentrate Plant at Chhingchhip were transferred to Mizo Food and Allied Industries Corporation (MIFCO) for commercial production. As on March 2002, there were 4,911 small scale industries in the state.

Infrastructure

Irrigation

The state has a potential of irrigating about 70,000 ha of land; of which, 25,000 ha can be irrigated by the lift irrigation method and the rest by canals and other methods. Thirty one (31) minor irrigation projects have been completed at different locations of the state. As on 1998-99, net irrigated area was 9 thousand ha and gross irrigated area was 10 thousand ha in Mizoram.

Power

The state's installed capacity of power utilities, as on December 2001, was 68.30 MW; out of which, 23.26 MW was hydro power. Besides, Central Government undertakings generated power of about 31.10 MW. As on October 2002, power generating capacity of the state was 86.3 MW.

Transport

Roadways: As on February 2002, there were 927 km of national highways, 354 km of state highways and 3,518 km of major district roads in the state.

Railways: Total railway tracks of the state in the year 2000-01 was 2 km and rail link was established at Bairabi.

Aviation: Aizawl, the capital city, is connected by air services. A full-fledged air-field at Lunglei is functioning since December 1998.

Education

Mizoram has the other distinction of being the second highest literate state in India after Kerala. According to 2001 Census, the literacy percentage of the state was 88.49% (against 90.92% for Kerala); male literacy was 90.69% and that for female was 86.13%, which was also second highest in the country; the first being Kerala (87.86%). In 2000-01, there were 30 graduate and post-graduate colleges, 30 higher-secondary schools, 383 Secondary schools and 1,224 primary schools in the Mizoram. A central university has also been established at Aizawl.

Health

Mizoram had 12 hospitals and 13 dispensaries in January 1998. Fifty five (55) primary health centres (PHCs) were functioning in July 2000.

Telecommunication

As on January 2003, there were 49,224 telephone connections and 603 village public telephones provided by the Bharat Sanchar Nigam Limited (BSNL) in Mizoram.

Tourism

Mizoram is known as the land of enchanting hills and famous for its vast expanse of jugged mountain ranges shrouded mystically in reddish blue haze. Aizawl, the capital city, located at nearly 4,000 feet above mean sea level, is the main tourist attraction centre. It is a religious and cultural centre of Mizoram. Besides this, the other tourist spots are: beautiful resort at Champhai on the Myanmar border, a natural lake with virgin forest at Tamdil, Saitul tourist resort and Vantawng falls (Mizoram's highest water falls).

Manipur



Physiography

Manipur lies between 23° 80' to 25° 68' N latitudes and 93° 03' to 94° 78' E longitudes. The state is bounded by Nagaland on north, Mizoram on south, Myanmar on east and Cachar district of Assam on west. Geographically, the state is divided into two tracts; the hills and the plains. The eastern wing of the Himalaya, specially its lower hills, constitutes an important feature of the landscape of Manipur. Some of the mountains are quite high like a peak on the Nagaland-Manipur border, which is more than 3,000 m in height. There are a number of rivers in the state; these are: Barak, Manipur, Iril, Jiri, Makru, Irang, Khuga, Chapki and Tizo, etc. Barak and its tributaries constituted the plains of the state. The state's capital Imphal is situated on the bank of Barak river.

Depending on the altitude of hill ranges, the climatic condition varies from tropical to sub-alpine. The wet forests and the pine forests occur between 900-2,700 m above mean sea level and they together sustain a host of rare and endemic plants and animal lives. Manipur is coveted the world over for some of the most beautiful and precious blooms such as orchids, which have an aura of exotic mysteries about them. Manipur is the abode of Shiroy Lily (*Lilium macklinae*), the paradise flower, which is not found elsewhere in the world. The state enjoys a typical monsoonal climate with variants, ranging from tropical to temperate conditions. The rapid changes in topography result in climatic changes in the short distances. This state receives plenty of rainfall; the average rainfall of the state is about 210 mm.

Manipur at a glance

| | |
|--------------------------------------|--|
| Geographical area (km ²) | 22,327 |
| Capital | Imphal |
| Number of districts | 9 |
| Population (2001) | 23,886,34 [Males: 12,07,338; Females: 11,81,296] |
| Major language | Manipuri |
| Status | Ranks 23 rd in area and 22 nd in population in India; 6 th in area and 5 th in population among the IHR states |
| Major rivers | Barak, Iril, Jiri, Makru, Irang, Khuga, Chapki |
| Forest cover (2001) | 75.81% of total geographical area |
| National park | Keibul-Lamjao |
| Wildlife sanctuary | Yangoupokpi-Lokchao |

| | |
|---|---|
| Rural population (2001) | 76.12% of total population |
| Number of towns and villages including un-inhabited villages (2001) | 37 and 2,275 |
| Agricultural land (2001) | 7.3% of total geographical area |
| Per Capita income (NSDP) (2000-01) | Rs. 8745/- (Quick Estimate) (At 1993-94 Prices) |
| Population density (2001) | 107/ km ² |
| Birth rate (2000) | 18.3/thousand |
| Death rate (2000) | 5.6/thousand |
| Infant mortality rate | 14/thousand [#] |
| Literacy rate (2001) | 68.87% [Male: 77.87%; Female: 59.7%] |
| Sex ratio (2001) | 978 (females per 1000 males) |
| Schedule Castes and Schedule Tribes | 2.51% and 39.96% of total population respectively |
| Number of Schedule Castes | 7 |
| Number of Schedule Tribes | 29 |
| Major tribal communities | Aimol, Anal, Angami, Chiru, Chothe, Gangte, Hmar, Kabul, Kacha Naga, Koirao, Koireng, Kom, Langang, Mao, Maram, Maring, Mizo, Monsang, Moyon, Paite, Puum, Ralte, Sema, Simte, Suhte, Tangkhul, Thadou, Vaiphul and Zou |
| Major sources of income | Agriculture |
| Major industries | Handicrafts, steel, cement, electronics |

[#]Provisional figure of 2002 from SRS, Office of the Registrar General of India, Ministry of Home Affairs.

Districts of Manipur

| Code-Districts | Area (km ²) | Population (2001) | Headquarter |
|-------------------|-------------------------|-------------------|---------------|
| 66. Churachandpur | 4570 | 2,28,707 | Churachandpur |
| 67. Chandel | 3313 | 1,22,714 | Chandel |
| 68. Senapati | 3271 | 3,79,214 | Senapati |
| 69. Ukhul | 4544 | 1,40,946 | Ukhul |
| 70. Thoubal | 514 | 3,66,341 | Thoubal |
| 71. Imphal West | 519 | 4,39,532 | Imphal West |
| 72. Imphal East | 709 | 3,93,780 | Imphal East |
| 73. Bishnupur | 496 | 2,05,907 | Bishnupur |
| 74. Tamenglong | 4391 | 1,11,493 | Tamenglong |

Economy

Agriculture

Agriculture is the main source of occupation of the state. Due to heavy rainfall, forests are abundant and the *Jhum* cultivation continues. Rice is the dominant crop and staple food of the state. Maize, pulses, oilseeds, sugarcane, vegetables and potato are among the other crops.

Industry

Manipur is an industrially backward state. Handloom and handicrafts are the traditional cottage industries. As per Annual Survey of Industries (1999-2000), Manipur had 61 factories, which employed 980 persons. Total investment was Rs. 697 lakh and net income generation estimated was about Rs. 115 lakhs. As on March 2002, there were 5,975 small scale industries in the state.

Infrastructure

Irrigation

With its vast water resources, Manipur offers much scope for irrigation. Within a short period of time, the state has made a remarkable progress in the field of irrigation. During 1998-99, a total of 59,100 ha of land was irrigated under the major and medium irrigation programs. As on 1998-99, net irrigated area was 65 thousand ha and gross irrigated area was 75 thousand ha in the state.

Power

As on October 2002, power generating capacity of the state was 154.11 MW. Loktak lake is the largest source of hydro-electricity. The main power generating stations of the state are: Loktak Hydro Electric Project, NEEPCO Kopli Hydro Electric Project and Kathalgari Thermal Power Station.

Transport

Roadways: As on February 2002, the state had 954 km of national highways, 1,118 km of state highways, 6,638 km of major district roads and 2,172 km of village roads.

Railways: The state had only 1 km railway line during 2000-01.

Aviation: Imphal is the only airport of the state and is connected with Aizwal, Guwahati, Kolkata and Delhi by air service.

Education

According to 2001 Census, the literacy percentage of the state was 68.87 % against the national average of 65.38%; male literacy was 77.87% and female literacy was 59.7%. In 2000-01, the state was having 2 universities, 50 graduate and post-graduate colleges, 76 higher-secondary schools, 529 secondary schools, and 2,572 primary schools.

Health

In Manipur, the number of hospitals and dispensaries were 17 and 42, respectively, as on January 1998. In July 2000, there were 69 primary health centres (PHCs) functioning in the state.

Telecommunication

As on January 2003, there were 40,246 telephone connections and 766 village public telephones provided by the Bharat Sanchar Nigam Limited (BSNL) in Manipur.

Tourism

Imphal, the capital of the state, is the main tourist attraction centre of the state. The other important tourist places of the state are: Shri Shri Govindaji Temple, Khwairamband Bazar (Ima Market), War Cemeteries, Saheed Minar, Nupi Laal (Women's War) Memorial, Khonghampat Orchidarium, INA Memorial (Moirang), Loktak Lake (the biggest fresh water lake in eastern India), Keibul Lamjao (the only floating national park in the world), Bishnu Temple at Bishnupur, Sendra, Moreh, Siroi Hills, Siroi Village and Dzuko Valley, etc. Polo is one of the major attractions of the tourists. Manipur has a number of folk dances. These dances have both grace and vigor and appeal to the viewers for their vitality as well as naturalness. Manipuri dance, a classical dance of India, is world famous.

Nagaland



Physiography

Nagaland lies between 25° 6' – 27° 4' N latitudes and 93° 20' – 95° 15' E longitudes in the extreme north-east of India. The state is bounded by Arunachal Pradesh on the north, Assam on west, Manipur on south and Myanmar on the east. The state is tight-packed with north-south aligned ranges defined by narrow and parallel valleys. The altitude of the state varies from 100 to 3,840 m (Saramati, the highest peak), which makes favourable conditions for growing different varieties of tropical and sub-tropical fruits, vegetables and cereal crops, etc. The main rivers are: Dhansiri, Doyang, Dikhu, Milak, Zungki and Tizu. The rapid changes in topography result in climatic changes within short span of time. The foot-hill plains sheltered valleys and the hill ranges are marked with climatic contrasts. The average rainfall of the state varies between 200 to 250 cm.

Nagaland at a glance

| | |
|---|--|
| Geographical area (km ²) | 16,579 |
| Capital | Kohima |
| Number of districts | 8 |
| Population (2001) | 19,88,636 [Males: 10,41,686; Females: 9,46,950] |
| Major language | English, Ao, Konyak, Angami, Seema and Lotha |
| Status | Ranks 25 th in area and 24 th in population in India; 8 th in area and 7 th in population among the IHR states |
| Major rivers | Dhansiri, Doyang, Dikhu, Milak, Zungki and Tizu |
| Forest cover (2001) | 80.49% of total geographical area |
| National park | Intanki |
| Major wildlife sanctuaries | Puliebadze, Rangapahar |
| Rural population (2001) | 82.26% of total population |
| Number of towns and villages including un-inhabited villages (2001) | 9 and 1,317 |
| Agricultural land (2001) | 38.4% of total geographical area |
| Per capita income (1999-00) | Rs. 8726/- (at 1993-94 prices). |
| Population density (2001) | 120/ km ² |
| Birth rate (1999) | 11.8/thousand |
| Death rate (1999) | 2.3/thousand |
| Infant mortality rate | 67/thousand [#] |

| | |
|-----------------------------|---------------------------------------|
| Literacy rate (2001) | 67.11% [Male: 71.77%; Female: 61.92%] |
| Sex ratio (2001) | 909 (females per 1000 males) |
| Schedule Tribes | 89.15% of total population |
| Number of Schedule Castes | 0 |
| Number of Schedule Tribes | 5 |
| Major tribal communities | Naga, Kuki, Kachari, Mikir and Garo |
| Major sources of occupation | Agriculture (84% of total occupation) |
| Major industries | Sugar, pulp & paper, handicrafts |

#Figure of 1991

Districts of Nagaland

| Code-Districts | Area (km ²) | Population (2001) | Headquarter |
|----------------|-------------------------|-------------------|-------------|
| 75. Kohima | 3114 | 314366 | Kohima |
| 76. Dimapur | 927 | 308382 | Dimapur |
| 77. Phek | 2026 | 148246 | Phek |
| 78. Zunheboto | 1255 | 154909 | Zunheboto |
| 79. Wokha | 1628 | 161098 | Wokha |
| 80. Mokokchung | 1615 | 227230 | Mokokchung |
| 81. Tuensang | 4228 | 414801 | Tuensang |
| 82. Mon | 1786 | 259604 | Mon |

Economy

Agriculture

Agriculture is the main source of occupation of the state. Due to heavy rainfall, forests are abundant and *Jhum* cultivation is being practiced on large scale. Rice is the dominant crop and staple food of the state. Maize and oilseed are also important crops. Coffee, cardamom and tea are grown as plantation crops in Nagaland. The state has considerable scope for growing fruits, spices and vegetables.

Industry

Nagaland is an industrially backward state. Handloom and handicrafts are the traditional cottage industries and most of them are operated by the cooperatives. The Nagaland Industrial Development Corporation (NIDC) is the premier promotional organization in providing guidance and capital assistance to the entrepreneurs. There is a sugar mill at Dimapur, a paper mill at Tuli, a plywood factory at Tizit and a mini cement plant at Wazeho. An industrial growth centre at Dimapur is under construction.

As per Annual Survey of Industries (1999-2000), Nagaland was having 147 factories employing about 3,247 persons. Total investment was Rs. 5,284 lakh and net income generated was estimated to be Rs. 418 lakh. As on March 2002, there were 1,643 small scale industries in the State

Infrastructure

Irrigation

Minor irrigation projects to divert small hill streams to irrigate valleys play an important role in Nagaland. Under minor irrigation, surface minor irrigation schemes covered

4,900 ha during 1998-99. As on 1998-99, net irrigated area was about 63 thousand ha and gross irrigated area was about 73 thousand ha in the state.

Power

Most of the villages of the state are electrified. The state's installed capacity of power utilities, as on December 2001, was 74.46 MW; out of which, 53.30 MW was generated through hydro power. Besides, Central Government undertakings generated power of about 52.10 MW. As on October 2002, power generating capacity of the state was 101.46 MW. A 24 MW hydro-electric project at Likimro is under construction.

Transport

Roadways: As on February 2002, there were 369 km of national highways, 398 km of state highways, 13,754 km of major district roads and 5,137 km of village roads in the state.

Railways: Dimapur is the only railway station in the state. The state is having 13 km railway line during 2000-01.

Aviation: Dimapur is the only airport of the state and is connected with Guwahati and Kolkata by air service.

Education

According to 2001, the literacy rate of the state was 67.11%. The male and female literacy was 71.77% and 61.92 %, respectively. In 2000-01, there were 1 university (at Kohima), 33 graduate and post-graduate colleges, 20 higher-secondary schools, 315 secondary schools and 1,491 primary schools located in Nagaland.

Health

Nagaland had 29 (including Community Health Centres) hospitals and 17 dispensaries in January 1998. Thirty three (33) primary health centres (PHCs) were also functioning, as on July 2000, in the state.

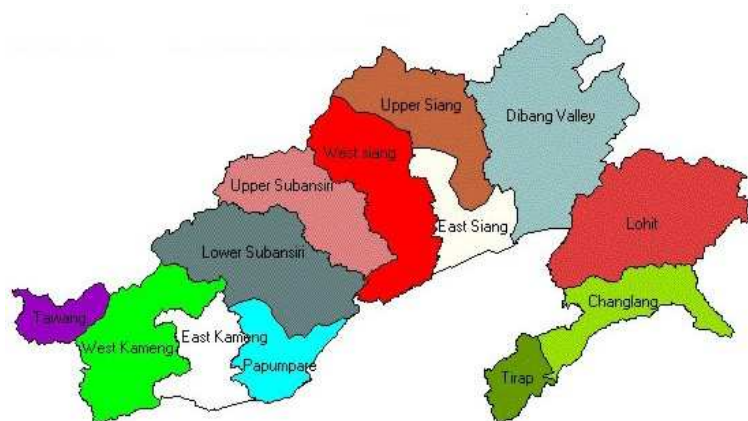
Telecommunication

As on January 2003, there were 42,648 telephone connections and 808 village public telephones (VPTs) provided by the Bharat Sanchar Nigam Limited (BSNL) in Nagaland.

Tourism

Nagaland has the distinction of being referred to as the Switzerland of the east; the exquisitely picturesque landscapes, the vibrant colourful sunrise and sunset, lush and verdant flora and unimaginable beauty, are molded perfectly for a breath taking experience. Main tourist places in the state are: Kohima, Dimapur, Khonoma, Dzukou valley, Dzulekie, Japfu Peak, Tseminyu, Longkhum, UngmaVeda Peak, Shilloi Lake and Mount Tostu, etc.

Arunachal Pradesh



Map shows un-divided districts of Arunachal Pradesh

Physiography

Arunachal Pradesh lies between $26^{\circ} 28'$ and $29^{\circ} 30'$ N latitudes and $91^{\circ} 30'$ and $97^{\circ} 30'$ E longitudes. The state is situated in the extreme north-east of India and is bounded by independent countries on three sides and by Assam and Nagaland states on one side. There are Bhutan, Tibet, China and Myanmar on the west, north-east, north and east of this state, respectively, and the Indian states Assam and Nagaland on the south.

Located at the confluence of the Indo-Chinese, Indo-Malayan and Indian biogeographical region with varied physio-climatic conditions, the state falls in the climatic transition between torrid and temperate zones of the northern hemisphere. Physiographically, it includes a longitudinal belt of the Assam plains of above 150m altitude in the southern border, the foot hills, the ranges of lesser sub-Himalayas (*Siwalik*), and greater Himalaya (*Himadri*) lying parallel from south to north with altitudes varying between 150m to 7,090m; amsl. The heights of mountain peaks show a greater variation ranging from 1,829 to 7,090m, the highest one is Kangte in the Tawang district. The main ridges and spurs of the sub-Himalaya fan out to the plains mostly in transverse direction except in some places where the prominent ridges run more or less parallel to each other from west to east. The high mountains in the northern ridge remain snow clad almost throughout the year. The terrain of the state consists of sub-mountain and mountainous ranges, sloping down to the plains of Assam, divided into valleys by the river Kameng, Subansiri, Siang, Lohit and Tirap. The mighty Brahmaputra, India's major river, enters this state from Tibet and flows into Assam from where it goes down to Bangladesh before falling into Bay of Bengal. The state is situated in the Eastern Himalaya and is the richest biogeographical province of the entire Indian Himalayan zone. The province has been identified as one of the world's 18 biodiversity hotspots. The richness of life forms, i.e., the flora and fauna that occur in these forests presents a panorama of biological diversity with over 5,000 plants, about 85 terrestrial mammals, over 500 birds and a large number of butterflies, insects and reptiles. This diversity of topographical and climatic conditions has favoured the growth of luxuriant forests that are home to myriad plant and animal forms adding beauty to the landscape.

Arunachal Pradesh at a glance

| | |
|---|--|
| Geographical Area (km ²) | 83,743 |
| Capital | Itanagar |
| Number of districts | 16 |
| Population (2001) | 10,91,117 [Males: 5,73,951; Females: 5,17,166] |
| Major language | Monpa, Miji, Adi, Sherdukpen |
| Status | Ranks 14 th in area and 26 th in population in India; the largest northeastern states and ranks 2 nd in area and 9 th in population among the IHR states |
| Major rivers | Brahmaputra, Kameng, Subansiri, Siang, Lohit and Tirap |
| Forest cover (2001) | 81.25% of total geographical area |
| National parks | Namdapha, Mouling |
| Major wildlife sanctuaries | Dibang, Pakhui, Kamlang, Tale valley, Mehao |
| Rural population (2001) | 79.59% of total population |
| Number of towns and villages including un-inhabited villages (2001) | 17 and 4,065 |
| Agricultural land (2001) | 3.5% of total geographical area |
| Per capita income (NSDP) (2000-01) | Rs.9013/- (quick estimate) (at 1993-94 prices) |
| Population density (2001) | 13/km ² |
| Birth rate (2000) | 22.3/thousand |
| Death rate (2000) | 6.0/thousand |
| Infant mortality rate | 37/thousand [#] |
| Literacy rate (2001) | 54.74% [Male: 64.07%; Female: 44.24%] |
| Sex ratio (2001) | 901 (females per 1000 males) |
| Schedule Castes and Schedule Tribes | 0.56 and 64.22% of total population respectively |
| Number of Schedule Castes | 16 |
| Number of Schedule Tribes | 12 |
| Major tribal communities | Monpa, Sherdukpen, Bugun, Aka, Miji, Nyishi, Sulung or Puroik, Adi, Apatani, Hill Miri, Tagin, Galo or Galong, Khampti, Mishmi, Singpho, Wancho, Tangsa, Nocte, Memba, Khemba |
| Major source of occupation | Agriculture, Forestry |
| Major industries | Small-scale agro-based industries & forest based industries |

[#]Provisional figure of 2002 from SRS, Office of the Registrar General of India, Ministry of Home Affairs.

Districts of Arunachal Pradesh

| Code-Districts | Area (km ²) | Population (2001) | Headquarter |
|-------------------------|-------------------------|-------------------|------------------|
| 83. Tirap | 2,362 | 1,00,227 | Khonsa |
| 84. Changlang | 4,662 | 1,24,994 | Changlang |
| 85. Lohit | 11,402 | 1,43,478 | Tezu |
| 86. Lower Dibang Valley | 3,900 | 50,448 | Roing |
| 87. Upper Dibang Valley | 9,029 | 7,105 | Anini |
| 88. East Siang | 4,005 | 87,430 | Pasighat |
| 89. Upper Siang | 6,188 | 33,146 | Yingkiong |
| 90. West Siang | 8,325 | 1,03,575 | Along |
| 91. Upper Subansiri | 7,032 | 54,995 | Daporijo |
| 92. Lower Subansiri | 10,135 | 97,614 | Ziro |
| 93. Papum-Pare | 2,875 | 1,21,750 | Itanagar (Yupia) |
| 94. East Kamang | 4,134 | 57,065 | Seppa |
| 95. West Kamang | 7,422 | 74,595 | Bomdila |

| | | | |
|------------------|-------|--------|--------|
| 96. Tawang | 2,172 | 34,705 | Tawang |
| 97. Anjaw | 8,600 | 18,441 | Hawii |
| 98. Kurung Kumey | 6,675 | 42,518 | Yangte |

Economy

Agriculture

Agriculture is the main source of earning of Arunachal Pradesh. The state gets as much as 500 cm of annual rainfall and this accounts for the large number of rivers and lakes in the region apart from extensive forests, which have induced the people to adopt the '*Jhum*' form of cultivation. About 53% of the total cultivated area is under *Jhum* and the rest is under permanent cultivation. Cultivators constitute 35.53% of the total population and they represent 72.29% of the total workers engaged in different economic activities.

Due to good rain, rice is the major crop. Other important crops are maize, millet, wheat, pulses, potato, oil seeds and sugarcane. Ecological condition of Arunachal Pradesh is congenial for horticultural crops. Besides, there are plenty of oranges, guavas, pineapples, lemon, litchi, papaya, and temperate fruits like apple, plum, pear, peach, cherries, walnut and almonds grown in the state.

Various steps were taken to diversify the agriculture economy by encouraging the cultivation of cash crops like potato and horticulture crops like apple, orange, guava and pineapple, etc. Many important projects such as Regional Seed Foundation Potato Farm at Tawang, Regional Apple Nursery at Dirang, and State Horticulture Farm at Sheragaon were set up with the help of North-Eastern Council (NEC) to boost agro-horticulture activities. Apart from these, Gramsevak Training Centres and Farmers Training Centres located at various parts of the state are imparting training in scientific methods of rural development and agriculture, respectively.

Industry

There are not heavy industries in Arunachal Pradesh but remarkable progress has been achieved in field of cottage and small-scale industries. Industrial development in this state has received fresh impetus. As on March 2002, there were 653 small scale industries in the state, which include sawmills, rice mills, fruit preservations, soap and candle making, steel fabrication and woodworks, etc. Apart from these, one mini cement plant, a fruit processing plant and a citronella oil industry are also registered. Weaving, basketry and carpet making of this state show a good progress. Technical education is being provided by Industrial Training Institute (Roing and Daporijo) to improve the skill of the workforce. In 1999, there were 88 craft and weaving centres in the state to provide training to the craftsmen and weavers. Local entrepreneurs are also enthusiastic about tea plantations in the state.

Mines and minerals

Arunachal Pradesh has a vast reserve of mineral oils and gas. It is estimated that there are 15 lakh tonnes reserve of mineral oils. This state has also coal reserves. Coal is explored from Namchik-Namphuk mines in Tirap district. Besides coal oil and gas, there is a huge reserve of dolomite, limestone, graphite, marble, lead and zinc, etc. It is also assumed that there is the reserve of iron and copper. The main mineral rich districts are - Lohit, Tirap,

Chanlang, West Kameng, Upper Subansiri and Dibang Valley, etc. In 1991, the Arunachal Pradesh Mineral Development and Trading Corporation Limited (APMDTCL) was set up for the conservation and exploration of the vast mineral resources of the state.

Infrastructure

Irrigation

Jhum fields on the slopes of hills are rain-fed. Patches of land under terrace and wet-rice cultivation, particularly the river line tracts and along foothill belt, are irrigated usually by small gravity channels and diversion weirs. A total area of 87,578 ha has been irrigated up to 1997-98. Pumping sets are also used for irrigation of smallholdings.

Power

There is a tremendous potential of hydroelectric generation in the state. The installed capacity of this state was increased from 10,000 KW in 1981 to 26 MW in 1999-2000. A total of 3,649 villages had been electrified upto 1999-2000. Diesel sets are also used to meet power requirements of the state.

Transport

Roadways: There were 392 km of national highways, 12,169 km of district roads and 4,657 km of village roads, as on February 2002, in the state. Total registered vehicles, as on 1999-2000, were 21,144 in state.

Railways: By end of 2000-01, there was only 1 km of railway line in the state

Aviation: Daporijo, Pasighat, Tezu, Naharlagun and Ziro are air linked by the *Vayudoot* services.

Health

Arunachal Pradesh had 262 allopathic hospitals and 11 dispensaries in January 1998 and 58 primary health centres (PHCs) were functioning in June 2000.

Education

According to 2001 Census, literacy rate in Arunachal Pradesh was 54.74% against the national average of 65.38%. The literacy rate for male was 64.07% and for women it was 44.24%, where as the national average for male was 75.85% and for female was 54.16%. In 2000-01, there were 1 university, 7 graduate and post-graduate colleges, 68 higher-secondary schools, 116 secondary schools and 1,303 primary schools located in the state.

Telecommunication

As on January 2003, there were 51,392 telephone connections and 711 village public telephones provided by the Bharat Sanchar Nigam Limited (BSNL) in Arunachal Pradesh.

Tourism

Bomdila and Tawang are the important tourist places in the state. India's largest Buddhist monastery is also situated at Tawang. Malinithan and Bhismaknagar are other important tourist attractions from historical point of view, where stone built palaces of 800 years old are located. The Parasuram Kund and Namdapha wild animal reserve forest are other major tourist attractions. Besides above, Tipi, Likabali, Pasighat, Along, Tezu, Miao, Roing, Daporijo and Khonsa are important tourist places in the state.

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Land use

The Technical Committee on Co-ordination of Agricultural Statistics, set up in 1948 by the Ministry of Food & Agriculture, recommended a nine-fold land-use classification replacing the old five-fold classification (viz. forest area not available for cultivation, other cultivated land, fallow land and net area sown). The total of these classes when added constitute the reporting area. This classification primarily depicts whether a particular area is cultivated, grazed or forested. Its main purpose is to show the distribution in detail of the existing land according to its actual use and not how a particular piece of land can be potentially utilized. Based on this nine-fold land-use classification, the division/share of total reporting area of the IHR is depicted in the following chart.

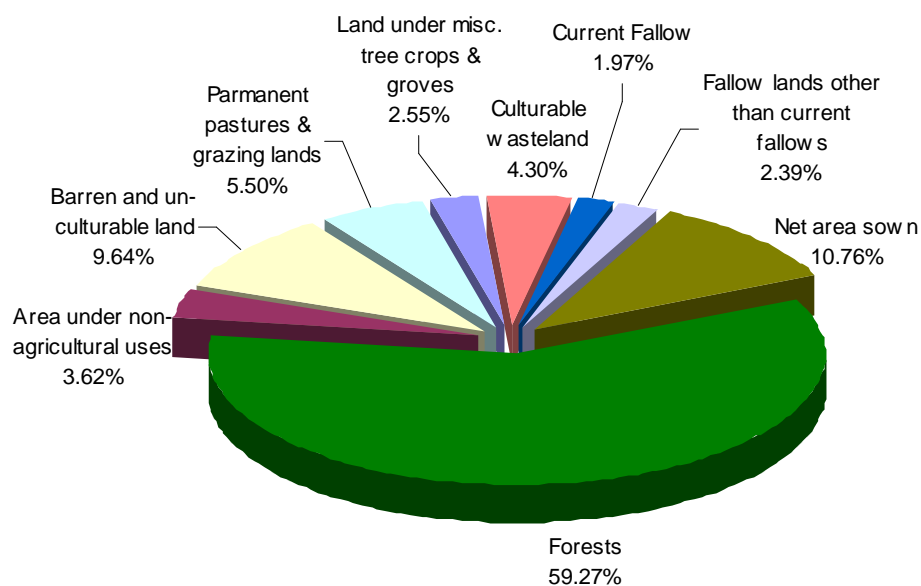


Figure 1: Major land use classification in the Indian Himalayan region (IHR).

Classification of geographical area ('000 ha) as major land use pattern of the IHR states as on 1998-99 is as follows (Table 1):

Table 1: Land use pattern – area wise distribution in the Indian Himalayan states (1998-99). ('000 ha)

| States | Professional surveys | Village papers (Reporting Area) | Forests | Not available for cultivation | | Others uncultivated land excluding fallow land | | | Fallow Land | | Net area sown | Area sown more than once | Total cropped area | Cultivable area |
|----------------------------------|----------------------|---------------------------------|---------------------|-----------------------------------|------------------------------|--|--|------------------|--|-----------------|--------------------|--------------------------|--------------------|-----------------|
| | | | | Land put to non-agricultural uses | Barren and uncultivable land | Permanent pasture and other grazing land | Land under tree crops and groves not included in net sown area | Culturable waste | Fallow land other than current fallows | Current fallows | | | | |
| Jammu & Kashmir | 22224 | 4505 ^(o) | 2747 ^(k) | 291 | 291 | 126 | 72 | 140 | 8 | 97 | 733 | 348 | 1081 | 1176 |
| Himachal Pradesh | 5567 | 4531 | 1077 | 239 | 910 | 1493 | 71 | 107 | 28 | 57 | 549 | 421 | 970 | 2305 |
| Uttaranchal [†] | - | 5566 | 3466 | 167 | 295 | 223 | 216 | 323 | 69 | 14 | 793 | - | - | - |
| Sikkim ^(d) | 710 | 710 | 257 | 97 | 173 | 69 | 5 | 1 | 9 | 4 | 95 | 32 | 127* | 183 |
| Meghalaya | 2243 | 2241 ^(f) | 932 | 85 | 140 | - | 158 | 470 | 166 | 69 | 221 | 44 | 266 | 1084 |
| Tripura ^(e) | 1049 | 1049 | 606 | 133 | ^(p) | ⁽ⁿ⁾ | 27 | 1 | 1 | 4 | 277 ^(c) | 167 | 444* | 310 |
| Mizoram ^(p) | 2108 | 2109 | 1598 | - | 65 | - | - | 174 | 163 | - | 109 | 7 | 116 | 446 |
| Manipur ⁽ⁱ⁾ | 2233 | 2211 | 602 | 26 | 1419 | ⁽ⁿ⁾ | 24 | ⁽ⁿ⁾ | - | - | 140 | 76 | 216 | 164 |
| Nagaland | 1658 | 1560 | 875 | 65 | - | - | 124 | 65 | 77 | 92 | 261 | 25 | 286 | 619 |
| Arunachal Pradesh ^(r) | 8374 | 5495 | 5154 | \$ | 48 | ⁽ⁿ⁾ | 44 | ⁽ⁿ⁾ | 36 | 28 | 185 | 65 | 250* | 293 |
| India | 328726 ⁺ | 306044 | 68973 | 22802 | 19554 | 11104 | 3598 | 13967 | 9913 | 13532 | 142600 | 50019 | 192619 | 194714 |

Note:

Data for Assam and West Bengal hills are not available.

[†]Data of 1999-2000.

⁽ⁿ⁾; Included in the area under Land under miscellaneous tree crops and groves, etc.

*; Forecast data have been utilized in estimating gross cropped area.

^(o); Excluded area under the illegal occupation of China and Pakistan.

⁽⁺⁾; Based on data of Central Statistical Organization and included geographical area under illegal occupation by China and Pakistan.

\$; Included under the head Barren and unculturable land.

^(k); Included forest area of 2089 thousand hectares reported by the chief conservator of forests of the state in 1983-84.

^(p) : Relates to the year 1996-97, except total cropped and irrigated area in Mizoram only.

^(c) : Reporting area is worked out taking the net sown area of 1993-94.

[Source: Statistical Abstract of Punjab 2002, Govt. of Punjab; Statistical Dairy – Uttaranchal 2002-2003, Directorate of Economics & Statistics, Dehradun]

Operational holdings

Operational holding refers to the actual area of the farmer under crops. The operational holdings of the households may be either owned by them or on tenancy. The size of operational holdings according to the area consists of marginal (<1 ha), small (1-2 ha), semi-medium (2-4 ha), medium (4-10 ha) and large (>10 ha).

Table 2: Number and area of operational holdings (1980-81, 1985-86 and 1990-91) in the IHR.

| States | Year | No. of Holdings ('000) | | | | | Area ('000 ha) | | | | |
|------------------|---------|------------------------|-----|------|------|-------|----------------|-----|------|------|-------|
| | | 0-2 | 2-4 | 4-10 | > 10 | Total | 0-2 | 2-4 | 4-10 | > 10 | Total |
| Jammu & Kashmir | 1980-81 | 903 | 104 | 27 | 2 | 1035 | 552 | 283 | 151 | 44 | 1030 |
| | 1985-86 | 1062 | 98 | 23 | 1 | 1184 | 589 | 263 | 128 | 45 | 1025 |
| | 1990-91 | 1099 | 98 | 20 | 1 | 1217 | 619 | 264 | 108 | 23 | 1014 |
| Himachal Pradesh | 1980-81 | 493 | 97 | 4 | 7 | 638 | 347 | 265 | 243 | 125 | 980 |
| | 1985-86 | 618 | 92 | 36 | 6 | 752 | 424 | 255 | 208 | 95 | 982 |
| | 1990-91 | 698 | 94 | 36 | 6 | 834 | 450 | 258 | 205 | 97 | 1010 |
| Sikkim | 1980-81 | 39 | 11 | 6 | 1 | 56 | 31 | 31 | 34 | 14 | 109 |
| | 1985-86 | 23 | 8 | 5 | 1 | 37 | 20 | 24 | 33 | 26 | 103 |
| | 1990-91 | 37 | 9 | 5 | 1 | 52 | 30 | 27 | 31 | 22 | 111 |
| Meghalaya | 1980-81 | 111 | 45 | 14 | 1 | 170 | 99 | 115 | 68 | 13 | 296 |
| | 1985-86 | 110 | 46 | 13 | 1 | 170 | 100 | 117 | 72 | 13 | 302 |
| | 1990-91 | 110 | 46 | 13 | 1 | 171 | 100 | 117 | 71 | 13 | 302 |
| Tripura | 1980-81 | 273 | 29 | 6 | Neg. | 308 | 195 | 80 | 34 | 21 | 330 |
| | 1985-86 | 281 | 27 | 3 | - | 311 | 221 | 74 | 14 | 8 | 317 |
| | 1990-91 | 286 | 28 | 4 | Neg. | 318 | 193 | 77 | 18 | 20 | 308 |
| Manipur | 1980-81 | 113 | 21 | 3 | Neg. | 136 | 101 | 53 | 15 | Neg. | 169 |
| | 1985-86 | 115 | 21 | 3 | Neg. | 139 | 103 | 54 | 16 | 1 | 174 |
| | 1990-91 | 118 | 21 | 3 | Neg. | 142 | 105 | 55 | 14 | 1 | 175 |
| Nagaland | 1980-81 | 30 | 16 | 33 | 37 | 116 | 31 | 42 | 203 | 585 | 860 |
| | 1985-86 | 27 | 19 | 42 | 36 | 124 | 27 | 49 | 260 | 596 | 932 |
| | 1990-91 | 34 | 26 | 47 | 33 | 142 | 39 | 76 | 298 | 556 | 968 |

Data of other states/regions are not available.

Note: # Reference period 1979-80 agricultural year.

[Source: Fertilizer Statistics, 1999-2000, The Fertilizer Association of India]

Protected areas

Protected areas (PAs) are the store houses of the maximum biodiversity amongst wild ecosystems. These areas are most sensitive indicators of environmental changes and slight change in any components of meteoric, edaphic or aquatic factors gets reflected in this typical ecosystem at comparatively faster pace than in any other ecosystems. The Protected Area Networks in the Indian Himalayan region (IHR) as on 2000 are as follows (Table 3):

Table 3: Protected Area Networks in the IHR (2000).

| States/regions | National Park | | Wildlife Sanctuary | | Total Area (km ²) | Percentage of protected area to the total geographical area of the state |
|-------------------|---------------|-------------------------|--------------------|-------------------------|-------------------------------|--|
| | No. | Area (km ²) | No. | Area (km ²) | | |
| Jammu & Kashmir | 4 | 4680.25 | 15 | 10312.25 | 14992.5 | 6.75 |
| Himachal Pradesh | 2 | 1429.40 | 32 | 5770.85 | 7200.25 | 12.93 |
| Uttaranchal | 6 | 4725.00 | 6 | 2413.76 | 7138.76 | 13.35 |
| Sikkim | 1 | 1784.00 | 5 | 265.10 | 2049.1 | 28.88 |
| West Bengal hills | 2 | 166.60 | 3 | 166.14 | 332.74 | 10.57 |
| Meghalaya | 2 | 267.48 | 3 | 34.20 | 301.68 | 1.35 |
| Assam hills | - | - | 4 | 360.86 | 360.86 | 2.36 |
| Tripura | - | - | 4 | 603.62 | 603.62 | 5.76 |
| Mizoram | 2 | 250.00 | 4 | 771.00 | 1021 | 4.84 |
| Manipur | 1 | 40.00 | 3 | 393.30 | 433.30 | 1.94 |
| Nagaland | 1 | 202.02 | 3 | 20.34 | 222.36 | 1.34 |
| Arunachal Pradesh | 2 | 2290.82 | 11 | 7606.37 | 9897.19 | 11.82 |
| IHR | 23 | 15835.57 | 93 | 28717.79 | 44553.36 | 8.35 |

[Source: Directory of Wildlife Protected Areas in India, Wildlife Institute of India, Dehradun]

The national average of national park and wildlife sanctuary is 1.17% and 3.56%, respectively, to the total geographical area of the country. The figure of the IHR is quite high as the national parks and wildlife sanctuaries account 2.97% and 5.38% of the total area of the region, respectively. These figures will further increase as about 15 thousand km² of additional area that is proposed for national parks and wildlife sanctuaries in the region. Sikkim, despite being a small state in the IHR, has a significant part (28.88%) of its total geographical area under protected area. This figure might cross 40% of the state's total area as 5 more national parks and wildlife sanctuaries are proposed in the state. The larger states (Himachal Pradesh, Arunachal Pradesh, Uttaranchal) have also proposals to have more protected areas, and as a result, about 15% of their respective geographical areas would be protected. Though, undoubtedly, the increase in the area of PAs would invigorate the environmental health, this may lead to park-people conflicts in the region. Besides these, the following Biosphere Reserves and Tiger Reserves have been declared under Man & Biosphere (MAB) and Project Tiger programme, respectively, in the IHR.

Table 4: Biosphere and tiger reserves in the IHR (2001).

| States | Biosphere Reserve | Area (km ²) | Tiger Reserve | Area (km ²) |
|--------------------------------|-------------------|-------------------------|---------------|-------------------------|
| Uttaranchal | Nanda Devi | 5860.69 | Corbett | 1316 |
| Sikkim | Khangchendjunga | 2619.92 | - | - |
| Meghalaya | Nokrek | 80.00 | - | - |
| Mizoram | - | - | Dampa | 500 |
| Arunachal Pradesh [§] | Dehang-Debang | 5111.50 | Namdapha | 1985 |

[§]Excluding Pakhui-Nameri Tiger Reserve; the area of which also falls in Assam state.

[Source: Directory of Wildlife Protected Areas in India, Wildlife Institute of India, Dehradun, 2000; Statistical Abstract India 2001, Central Statistical Organization, New Delhi]

In 2000, there were 13 Biosphere Reserves and 27 Tiger Reserves operating in India covering an area about 2.82% of total geographical area of the country whereas in the IHR

about 3.27% of total area is covered by these biosphere and tiger reserves. State wise figures under zoos in the IHR are as follows:

Table 5: State-wise area covered under various zoos in the IHR (2000).

| State | Zoo | Total Area (ha) |
|-------------------|---------------------------------------|-----------------|
| Himachal Pradesh | Himalayan Nature Park, Kufri | 90.00 |
| Uttaranchal | PT. Govind Ballabh Pant Zoo, Nainital | 4.69 |
| Sikkim | Himalayan Zoological Park, Bulbuley | 205.00 |
| West Bengal Hills | Padmaja Naidu Zoo, Darjeeling | 44.00 |
| Meghalaya | Lady Hydari Park, Shillong | 3.50 |
| Tripura | Sepahijala Zoo | 61.20 |
| Mizoram | Aizawl Zoo | 198.00 |
| Manipur | Manipur Zoological Park, Imphal | 9.50 |
| Nagaland | Zoological Park, Kohima | 12.00 |
| Arunachal Pradesh | Itanagar Zoological Park | 250.00 |

Source : Forestry Statistics 2000

Wastelands

The wastelands are the degraded lands, which can be brought under vegetative cover with reasonable efforts. These lands are currently underutilized and deteriorating at an alarming rate due to lack of appropriate water and soil management measures. Development of wastelands is an important programme that includes, among other things, checking land degradation, increasing bio-mass availability and putting wastelands to sustainable use and to attain this, different wastelands developmental schemes are being implemented. The NRSA* estimates of category-wise wastelands in the IHR in 2000 are as follows:

Table 6: State-wise/category-wise wastelands in the IHR (2001). (area in km²)

| States | Gullied/ Ravenous Land | Land with/ without Scrub | Water logged/ Marshy Land | Saline/ Alkaline Area | Shifting Cultivation Area | Degraded Notified Forest Land | Degraded Pastures/ Grazing Land |
|-------------------|------------------------------|--------------------------------|------------------------------------|-----------------------------|---------------------------------|-------------------------------------|--|
| Jammu & Kashmir | 21.25 | 4495.30 | 246.50 | 0.00 | 0.00 | 2491.66 | 267.51 |
| Himachal Pradesh | 121.89 | 2056.50 | 15.69 | 1.36 | 0.00 | 4589.98 | 4278.17 |
| Uttaranchal | 15.85 | 240.18 | 67.64 | 0.00 | 0 | 1088.14 | 116.37 |
| Sikkim | 0.00 | 1073.11 | 0.00 | 0.00 | 0.00 | 1060.57 | 0.00 |
| WB hills | 0 | 14.4 | 0.13 | 0 | 0 | 44.60 | 0.67 |
| Meghalaya | 0.00 | 4190.63 | 14.87 | 0.00 | 2086.77 | 3612.11 | 0.00 |
| Assam hills | 0 | 0 | 0 | 0.00 | 8046.75 | 578.44 | 0 |
| Tripura | 0.00 | 286.87 | 0.11 | 0.00 | 400.88 | 588.18 | 0.00 |
| Mizoram | 0.00 | 0.00 | 0.00 | 0.00 | 3761.23 | 310.45 | 0.00 |
| Manipur | 0.00 | 1.32 | 324.60 | 0.00 | 12014.06 | 608.64 | 0.00 |
| Nagaland | 0.00 | 1596.46 | 0.00 | 0.00 | 5224.65 | 1582.99 | 0.00 |
| Arunachal Pradesh | 0.00 | 3326.78 | 41.47 | 0.00 | 3088.08 | 1416.67 | 2134.99 |
| IHR | 158.99 | 17281.55 | 711.01 | 1.36 | 34622.42 | 17972.43 | 6797.71 |
| India | 20553.35 | 194014.29 | 16568.45 | 20477.38 | 35142.20 | 140652.31 | 25978.91 |

Contd.

| Degraded Land under Plantation crop | Sandy-Land/ Coastal | Mining/ Industrial Wastelands | Barren/ Rocky Area | Steep Sloping Area | Snow/ Glacial Area | Total Wastelands | % to Total Geographic Area | States |
|-------------------------------------|---------------------|-------------------------------|--------------------|--------------------|--------------------|------------------|----------------------------|-------------------|
| 640.56 | 869.26 | 0.31 | 32821.50 | 1685.42 | 21904.97 | 65444.24 | 29.45 ^{\$} | Jammu & Kashmir |
| 2457.59 | 105.04 | 85.66 | 3858.04 | 1529.67 | 12559.42 | 31659.00 | 56.87 | Himachal Pradesh |
| 10.15 | 0 | 0.91 | 407.91 | 966.20 | 13166.37 | 16079.72 | 30.07 | Uttaranchal |
| 0.00 | 0.00 | 0.00 | 10.34 | 0.00 | 1425.56 | 3569.58 | 50.30 | Sikkim |
| 0 | 0.25 | 0 | 0.42 | 9.15 | 0 | 69.62 | 2.21 | WB hills |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 9904.38 | 44.16 | Meghalaya |
| 0 | 0 | 0 | 54.5 | 0 | 0 | 8679.69 | 56.65 | Assam hills |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1276.03 | 12.17 | Tripura |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4071.68 | 19.31 | Mizoram |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 12948.62 | 58.00 | Manipur |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 8404.10 | 50.69 | Nagaland |
| 6.07 | 309.43 | 0.30 | 1262.36 | 7.93 | 6732.17 | 18326.25 | 21.88 | Arunachal Pradesh |
| 3114.37 | 1283.98 | 87.18 | 38415.07 | 4198.37 | 55788.49 | 180432.91 | 33.81 ^{\$} | IHR |
| 5828.09 | 50021.65 | 1252.13 | 64584.77 | 7656.29 | 55788.49 | 638518.31 | 19.42 ^{\$} | India |

^{\$}Total area of Jammu & Kashmir is included for calculating percentage.

*NRSA: National Remote Sensing Agency

[Source: Wastelands Atlas of India 2000, Department of Land Resources, Ministry of Rural Development, Government of India]

Table 7: Extent of degraded lands in the IHR (2001). (area in lakh ha)

| States | Water Erosion | Wind Erosion | Ravines | Salt affected | Water Logging | Shifting Cultivation | Degraded Forest | Total |
|-------------------|---------------|--------------|---------|---------------|---------------|----------------------|-----------------|-------|
| Jammu & Kashmir | 6.73 | - | - | - | 0.10 | - | 2.10 | 8.93 |
| Himachal Pradesh | 10.75 | - | - | 5.26 | - | - | 8.39 | 19.14 |
| Sikkim | 2.58 | - | - | - | - | - | 0.45 | 3.03 |
| Meghalaya | 5.48 | - | - | - | - | 2.65 | 2.89 | 11.02 |
| Tripura | 0.45 | - | 0.60 | - | - | 1.12 | 1.22 | 2.79 |
| Mizoram | 2.87 | - | - | - | - | 1.89 | 1.34 | 6.10 |
| Manipur | 2.94 | - | - | - | - | 3.60 | 0.80 | 7.34 |
| Nagaland | 2.77 | - | - | - | - | 6.33 | 1.28 | 10.38 |
| Arunachal Pradesh | 1.58 | - | - | - | - | 2.10 | 22.86 | 26.54 |

Data for the state of Uttaranchal and the hill regions of Assam and West Bengal are not available.

[Source : Lok Sabha Starred Question No. 356 dated 16.08.2001]

Wetlands

Wetlands are areas where the water table is at or near the surface of the land or where the land is covered by shallow water. These include the rivers, lakes, coastal lagoons, mangroves, peat lands, fens, bogs and coral reefs, in addition to man-made wetlands that include fish and shrimp ponds, ponds, irrigated agricultural lands, salt pans, reservoirs, canals and sewage farms, etc. Wetlands are amongst the most productive ecosystems that are valuable as sources, sinks and transformers of a multitude of chemical, biological and genetic materials. They support high concentrations of birds, mammals, reptiles, amphibians, fish and invertebrate species. The distributions of natural and artificial (man-made) wetlands in the states of the IHR as on 2002 are follows:

Table 8: Natural and man-made wetlands in the IHR states (2002).

| State/UTs | Natural | | Man-made | |
|-------------------|---------|-----------|----------|-----------|
| | No. | Area (ha) | No. | Area (ha) |
| Jammu & Kashmir | 18 | 7227 | N.A. | 21880 |
| Himachal Pradesh | 5 | 702 | 3 | 19165 |
| Sikkim | 42 | 1101 | 2 | 3.5 |
| Meghalaya | 2 | N.A. | N.A. | N.A. |
| Tripura | 3 | 575 | 1 | 4833 |
| Mizoram | 3 | 36 | 1 | 1 |
| Manipur | 5 | 26600 | N.A. | N.A. |
| Nagaland | 2 | 210 | N.A. | N.A. |
| Arunachal Pradesh | 2 | 20200 | N.A. | N.A. |

Data for the state of Uttaranchal and the hill regions of Assam and West Bengal are not available.

[Source : Lok Sabha Unstarred Question No. 4537 dated 22.04.2002]

A number of major wetlands in the IHR have been identified as wetlands of national importance and coordinating agencies have been identified for their conservation. The list of wetlands and ongoing conservation programmes, as on 2003, under different universities are as follows:

Table 9: Wetlands under conservation project in the IHR states (2003).

| Wetlands | States | University Identified for Collaboration |
|-----------------|--------------------------|---|
| Wullar | Jammu & Kashmir | Jammu & Kashmir University |
| Tso Morari | Jammu & Kashmir | Jammu & Kashmir University |
| Tisgul Tso | Jammu & Kashmir | Jammu & Kashmir University |
| Hokersar | Jammu & Kashmir | - |
| Mansar-Surinsar | Jammu & Kashmir | - |
| Pangong Tsar | Jammu & Kashmir (Ladakh) | - |
| Chandratal | Himachal Pradesh | Himachal University, Shimla |
| Rudrasagar | Tripura | Tripura University |
| Loktak | Manipur | Manipur University |

Source : Rajya Sabha Starred Question No. 556 dated 29.04.2003

Forest cover

The forest cover of the country, according to 2001 assessment, was 67.55 million ha (20.55% of the total geographical area), which has increased from 63.73 million ha in 1999. Out of the total forest cover (20.55%), the dense forest and open forest contribute about 12.68% and 7.87%, respectively, countrywide. The forest cover of the IHR is quite impressive in comparison to the national average as the dense and open forest covers of the region contribute about 25.28 and 15.12% of total geographical area of the region, respectively. The states of Mizoram, Arunachal Pradesh and Nagaland have highly significant portion (>80%) of their total area under forests. The forest covers of the IHR states according to 2001 assessment were as follows:

Table 10: State-wise/region-wise area under forest cover in the IHR (2001).

| States/regions | Forest cover (in km ²) | | | % to the total geographical area | Scrub |
|-------------------|------------------------------------|--------|--------|----------------------------------|-------|
| | Dense | Open | Total | | |
| Jammu & Kashmir | 11848 | 9389 | 21237 | 9.56 | 3087 |
| Himachal Pradesh | 10429 | 3931 | 14360 | 25.79 | 566 |
| Uttaranchal | 19023 | 4915 | 23938 | 44.76 | 598 |
| Sikkim | 2391 | 802 | 3193 | 45.00 | 341 |
| West Bengal hills | 1417 | 779 | 2196 | 69.74 | - |
| Meghalaya | 5681 | 9903 | 15584 | 69.48 | 259 |
| Assam Hills | 6685 | 5545 | 12230 | 79.82 | 107 |
| Tripura | 3463 | 3602 | 7065 | 67.38 | 44 |
| Mizoram | 8936 | 8558 | 17494 | 82.98 | 467 |
| Manipur | 5710 | 11216 | 16926 | 75.81 | 190 |
| Nagaland | 5393 | 7952 | 13345 | 80.49 | 47 |
| Arunachal Pradesh | 53932 | 14113 | 68045 | 81.25 | 141 |
| IHR | 134908 | 80705 | 215613 | 40.41 | 5847 |
| India | 416809 | 258729 | 675538 | 20.55 | 47318 |

Source: State of Forest Report 2001, Forest Survey of India, Ministry of Environment and Forests.

Change in forest cover in the IHR

In the IHR, the north-eastern states contribute major portions as forest covers in the land use pattern of the region. However, the western and central Himalayan states (Jammu & Kashmir, Himachal Pradesh and Uttaranchal) have shown a marginal growth (exponential trend > 1) in forest cover during the period 1993-2001. Tripura, Sikkim and West Bengal hills have shown a steady increasing trend in their forest cover over the years. The forest cover assessments of the states in the IHR and the exponential trends in forest cover for the period 1993 to 2001 have been depicted in Table 11.

The increase in forest cover in some states of the IHR does not reveal the extent of significant pressure on this resource particularly in the states of Himachal Pradesh and Jammu and Kashmir where forests occupy a relatively small proportion of the total geographical area as compared to the other states of the IHR. Forest areas in the proximity of population centers and villages are reported to be degrading faster due to collection of fuel wood and cattle grazing as compared to the forests away from population centres that located in inaccessible areas (FSI 2000).

Table 11: Forest cover change assessments in the IHR.

| States/regions | Forest cover (in km ²) | | | | | Exponential trend |
|-------------------|------------------------------------|--------|--------|--------|--------|-------------------|
| | 1993 | 1995 | 1997 | 1999 | 2001 | |
| Jammu & Kashmir | 20443 | 20433 | 20440 | 20441 | 21237 | 1.0039 |
| Himachal Pradesh | 12502 | 12501 | 12521 | 13082 | 14360 | 1.0162 |
| Uttaranchal | - | - | 23243 | 23260 | 23938 | 1.0074 |
| Sikkim | 3119 | 3127 | 3129 | 3118 | 3193 | 1.0022 |
| West Bengal hills | - | - | - | 1455 | 2196 | - |
| Meghalaya | 15769 | 15714 | 15657 | 15633 | 15584 | 0.9986 |
| Assam hills | - | - | - | 13257 | 12230 | - |
| Tripura | 5538 | 5538 | 5546 | 5745 | 7065 | 1.0266 |
| Mizoram | 18697 | 18576 | 18775 | 18338 | 17494 | 0.9928 |
| Manipur | 17621 | 17558 | 17418 | 17384 | 16926 | 0.9955 |
| Nagaland | 14348 | 14291 | 14221 | 14164 | 13345 | 0.9923 |
| Arunachal Pradesh | 68661 | 68621 | 68602 | 68847 | 68045 | 0.9993 |
| India | 639386 | 638879 | 633397 | 637293 | 675538 | 1.0054 |

Note: Assessment for the state of Uttaranchal was done from the figures of Uttar Pradesh as the state Uttaranchal became the 27th state of the Republic of India on 9 November 2000.

Minerals and ores

The mining in the IHR is not fully explored because of its fragile environment, inaccessibility and lack of required infrastructure in the region. However, some exploration of natural gases, petroleum and lime stone, etc., has been done at various locations. Production of minerals and selected ores in the region as on 2000-2001 are as below:

Table 12: Production of major minerals in the states of the IHR.

| States | Coal (‘000 ton) | Natural gas (million cubic meter) | Crude petroleum (‘000 ton) | Lime stone (‘000 ton) | Gypsum (‘000 ton) | Lead concentrate (ton) | Zinc concentrate (ton) | Steatite (ton) |
|-------------------|-----------------------|---|----------------------------------|--------------------------|----------------------|------------------------------|------------------------------|-------------------|
| Jammu & Kashmir | 32 (22628) | - | - | 142 (33100) | 25 (9239) | - | - | - |
| Himachal Pradesh | - | - | - | 6219 (585860) | - | - | - | - |
| Uttaranchal | - | - | - | 19 (1520) | - | - | - | 26410 (4586) |
| Sikkim | - | - | - | - | - | 260 (247) | 257 (1605) | - |
| Meghalaya | - | - | - | 292 (36809) | - | - | - | - |
| Tripura | - | 376 (676800) | - | - | - | - | - | - |
| Mizoram | - | - | - | - | - | - | - | - |
| Manipur | - | - | - | - | - | - | - | - |
| Nagaland | - | - | - | - | - | - | - | - |
| Arunachal Pradesh | - | - | 78 (434460) | - | - | - | - | - |

Note: The figure in the parentheses is the value of respective minerals in thousand rupees.

Data for hill region of Assam and West Bengal are not available.

[Source : CSO 2001]

Human resource

The population variables are both determinants and consequences of the development process of any region. The IHR shows a thin and dispersed human population as compared to the national figures due to its physiographic condition and poor infrastructure development. However, the growth rate in the IHR is much higher than the national average. Some demographic parameters of the states of the IHR according to 2001 Census are as follows:

Table 13: Selected demographic parameter of the IHR.

| States/regions | Percentage contribution to the total IHR population | Decadal Growth rate (1991-2001) | Annual average exponential growth rate (1961-2001) | Population density | Sex ratio (females/1000 males) | Literacy rate (+7yr) (%) |
|-------------------|---|---------------------------------|--|--------------------|--------------------------------|--------------------------|
| Jammu & Kashmir | 25.41 (0.98) | 30.46 | 2.6 | 99 | 900 | 54.46 |
| Himachal Pradesh | 15.34 (0.59) | 17.53 | 1.93 | 109 | 970 | 75.91 |
| Uttaranchal | 21.40 (0.83) | 20.27 | 2.16 | 159 | 964 | 72.28 |
| Sikkim | 1.36 (0.05) | 32.98 | 3.01 | 76 | 875 | 69.68 |
| West Bengal hills | 4.05 (0.16) | 23.54 | 2.38 | 510 | 943 | 72.87 |
| Meghalaya | 5.82 (0.22) | 29.94 | 2.74 | 103 | 975 | 63.31 |
| Assam hills | 2.52 (0.10) | 22.74 | 2.56 | 65 | 915 | 60.68 |
| Tripura | 8.05 (0.31) | 15.74 | 2.57 | 304 | 950 | 73.66 |
| Mizoram | 2.25 (0.09) | 29.19 | 3.02 | 42 | 938 | 88.49 |
| Manipur | 6.03 (0.23) | 30.02 | 2.8 | 107 | 978 | 68.87 |
| Nagaland | 5.02 (0.19) | 64.41 | 4.21 | 120 | 909 | 67.11 |
| Arunachal Pradesh | 2.75 (0.11) | 26.21 | 2.94 | 13 | 901 | 54.74 |
| IHR | 100 | 25.43 | 2.47 | 74 | 940 | 67 |
| India | 100 (100) | 21.35 | 2.12 | 324 | 933 | 65.38 |

Note: Values in parenthesis are % contribution of the respective states/regions to the total population of the country.

[Source : Census 2001]

Population distribution

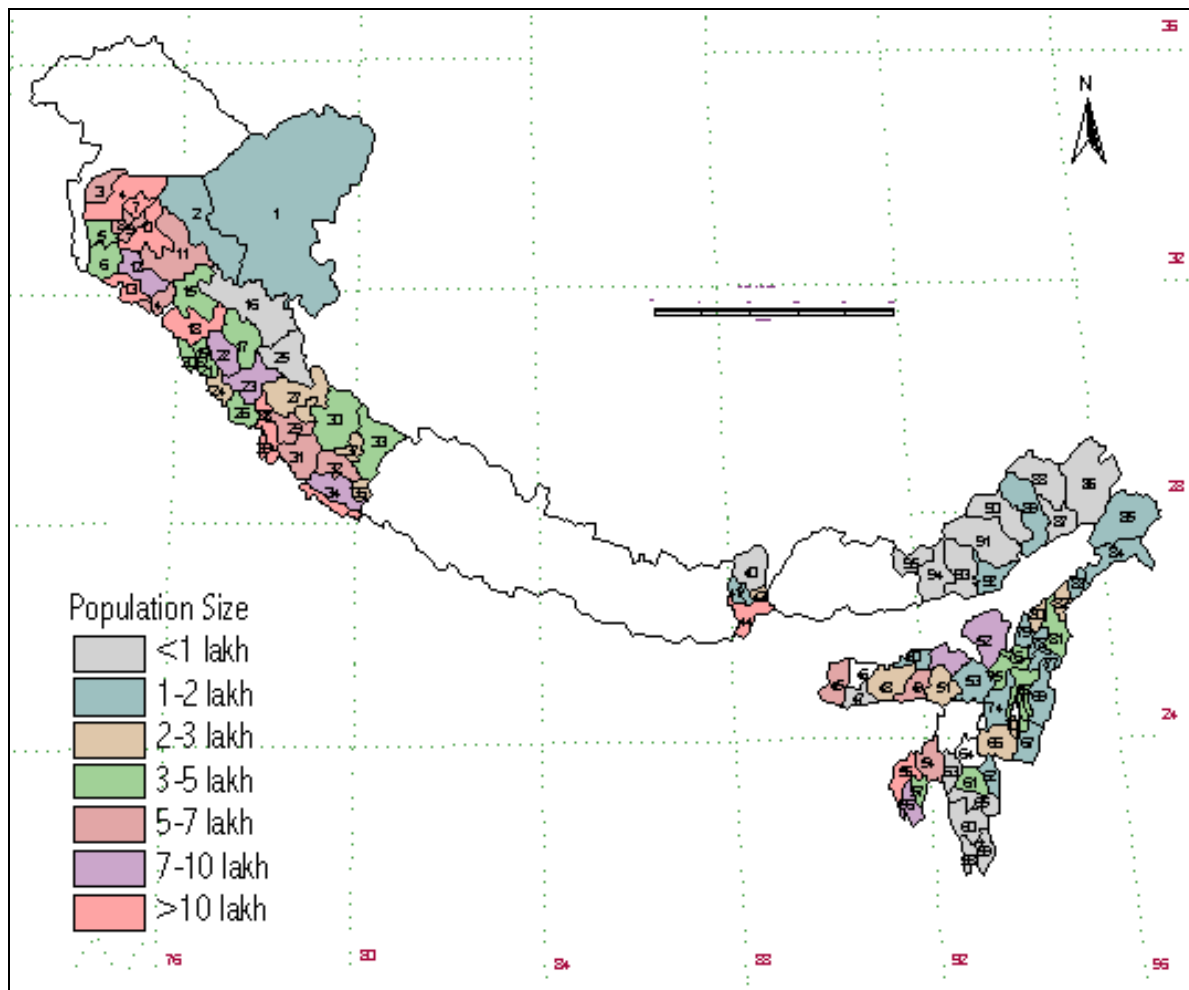


Figure 2: Distribution of human population (2001 census) across the IHR districts.

Population size of most of the IHR districts is less than 4 lakhs and falls below the average of the region. There are only 10 populated districts in the region with population more than 10 lakhs. Darjeeling (West Bengal hills) is the highest populated (16,05,900 according to 2001 census) district while Upper Siang (Arunachal Pradesh) is the least populated district having a total population of 33,140 persons.

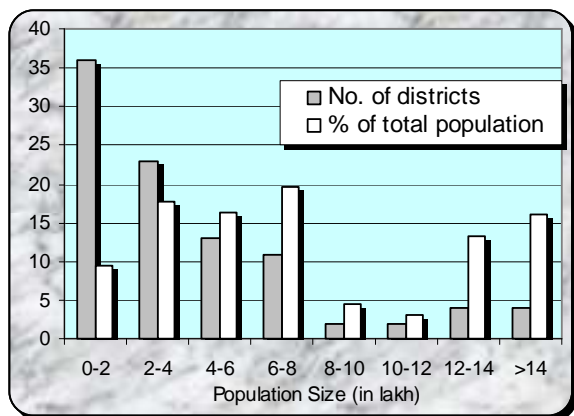


Figure 3: Population distribution across the IHR according to varied population sized districts.

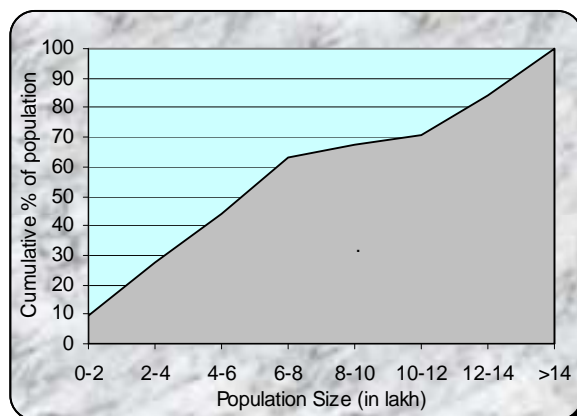


Figure 4: Cumulative distribution of districts according to incremental populous districts across the IHR.

Population growth

The population of the IHR increased 2.7 times in the last 4 decades. Though in the last decade (1991-2001), the population growth rate (25.43%) showed a significant decline; it was still higher than the national growth rate (21.35%). Except Nagaland and Jammu & Kashmir, all the Himalayan states including hill region of Assam and West Bengal exhibit a declining growth rate in the last 4 decades. The growth rate of population across the IHR districts is depicted in the following figure.

The decadal growth rate (1991-2001) of human population in the IHR was recorded 25.43%, which is higher than the country's average growth rate (21.34%). Nagaland recorded the highest (64.41%) decadal growth rate whereas neighboring Tripura recorded the lowest (15.74%) decadal growth rate in the region. The growth rates of the most of the districts fall above the average growth rate of the region. However a negative growth rate (-3.5%) has also been recorded in West Aizwal (Mamit) district of Mizoram. In contrast, Wokha in Nagaland recorded the highest growth rate (95.01%) in the IHR.

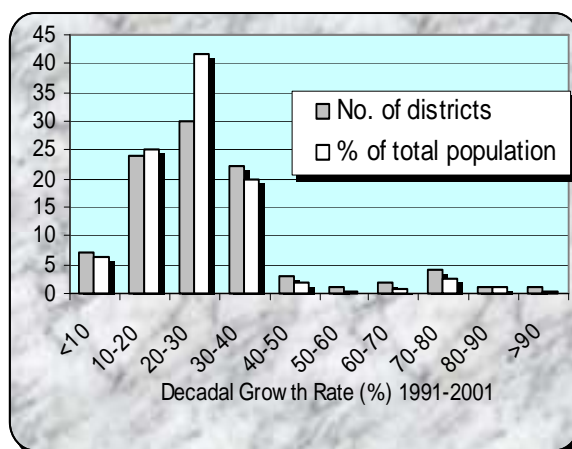


Figure 5: Growth rate of population across the IHR.

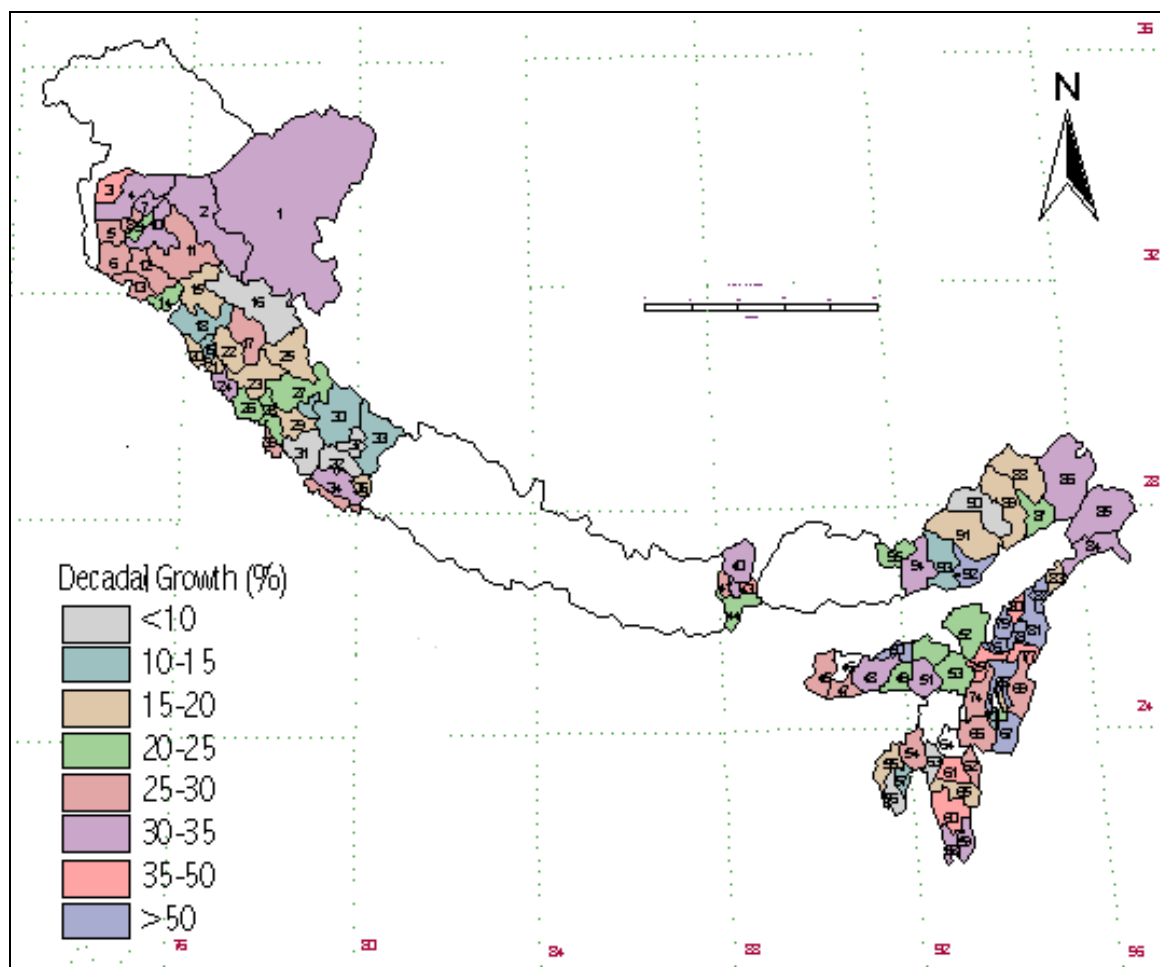


Figure 6: Decadal growth rate (1991-2001) of population in the IHR.

Table 14: Statewise birth rate and death rate in the IHR (1999).

| States | Birth Rate | | | Death Rate | | |
|-------------------|------------|-------|-------|------------|-------|-------|
| | Total | Rural | Urban | Total | Rural | Urban |
| Himachal Pradesh | 23.8 | 24.3 | 16.8 | 7.3 | 7.5 | 5.2 |
| Uttaranchal | 19.6 | 24.5 | 16.1 | 6.5 | 10.5 | 3.5 |
| Sikkim | 21.6 | 21.9 | 14.7 | 5.8 | 5.9 | 3.4 |
| Meghalaya | 28.7 | 31.1 | 15.7 | 9.1 | 10.2 | 3.3 |
| Tripura | 17.0 | 17.5 | 14.4 | 5.7 | 5.7 | 5.7 |
| Mizoram | 17.0 | 18.7 | 14.8 | 5.5 | 6.9 | 3.7 |
| Manipur | 18.6 | 19.4 | 16.4 | 5.4 | 5.0 | 6.6 |
| Nagaland | 11.8 | NA | 11.8 | 2.3 | NA | 2.3 |
| Arunachal Pradesh | 22.3 | 23.2 | 13.5 | 6.0 | 6.4 | 1.9 |
| India | 26.1 | 27.6 | 20.8 | 8.7 | 9.4 | 6.3 |

Note: The figure of India excluded Jammu & Kashmir due to part-receipt of returns; Data for Assam and West Bengal hill were not available.

[Source: Sample Registration System (SRS) Bulletin, Volume 35, No. 1, April 2001, Registrar General, India.]

Population density

The population density measures the human pressure on the total land of a country or a region. The average population density of the IHR (74 persons/km²) is much less than the national average (324 persons/km²) and varied widely from 2 to above 800 persons per km² in the districts. At state level, Tripura is the most densely populated (304 persons/km²) while Arunachal Pradesh has the lowest density (13 persons/km²) in the region. The variation in density is mainly due to the physiographic condition of the region. For example, the high altitude districts of Lahul & Spiti (Himachal Pradesh), Leh (Jammu & Kashmir) and Dibang Valley (Arunachal Pradesh) have recorded a population density of less than 5 per km². In contrast Imphal (West & East in Manipur) and Thoubal (Manipur), West Tripura (Tripura), Haridwar (Uttaranchal), Darjeeling (West Bengal) and Srinagar and Jammu (Jammu & Kashmir) recorded a density of more than 500 per km². Imphal West (Manipur) is the most densely (about 847 persons/km²) populated district, while Lahul-Spiti (Himachal Pradesh) is the least populated district (2 persons/km²) in the IHR.

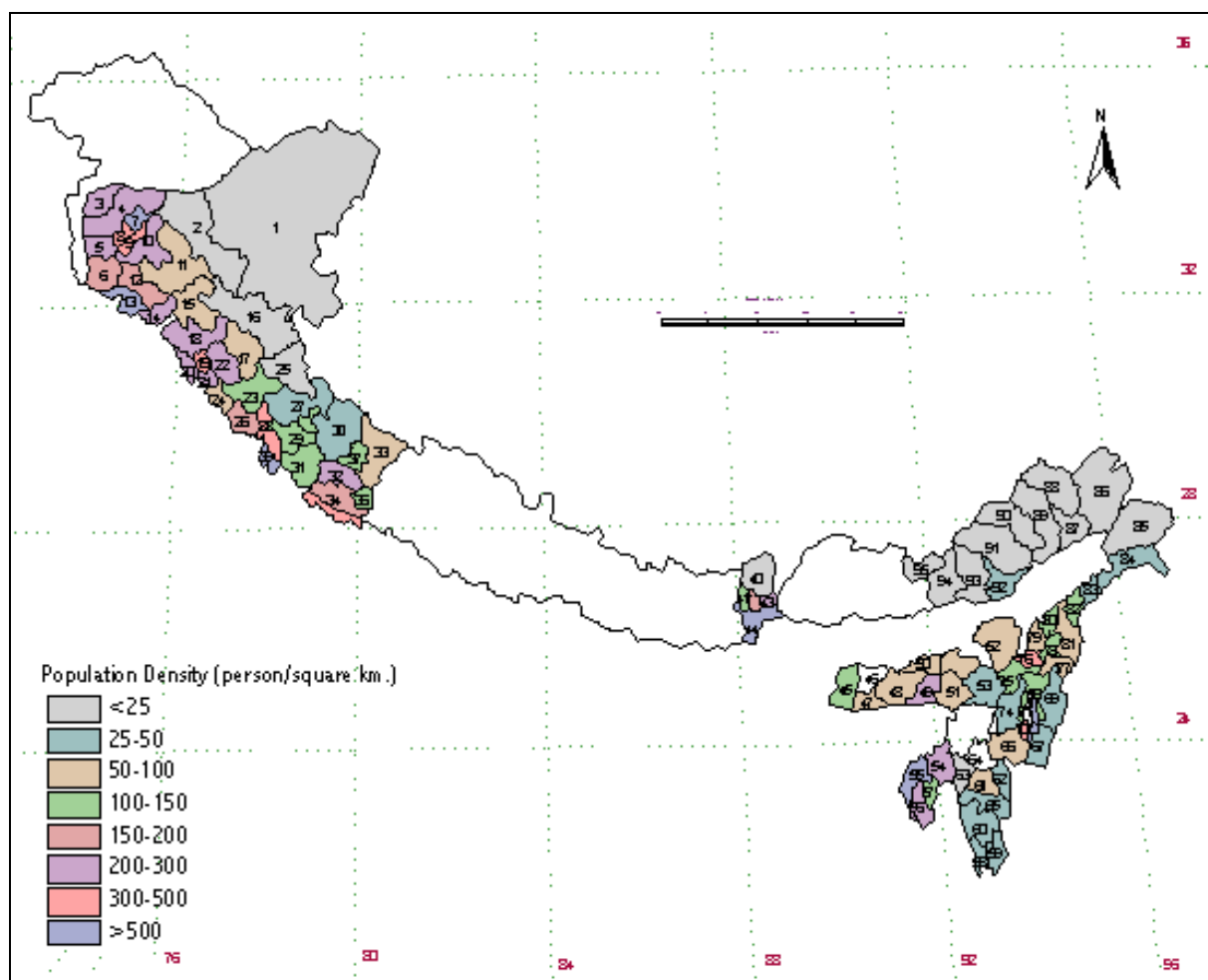


Figure 7: Diverse population density across the IHR districts.

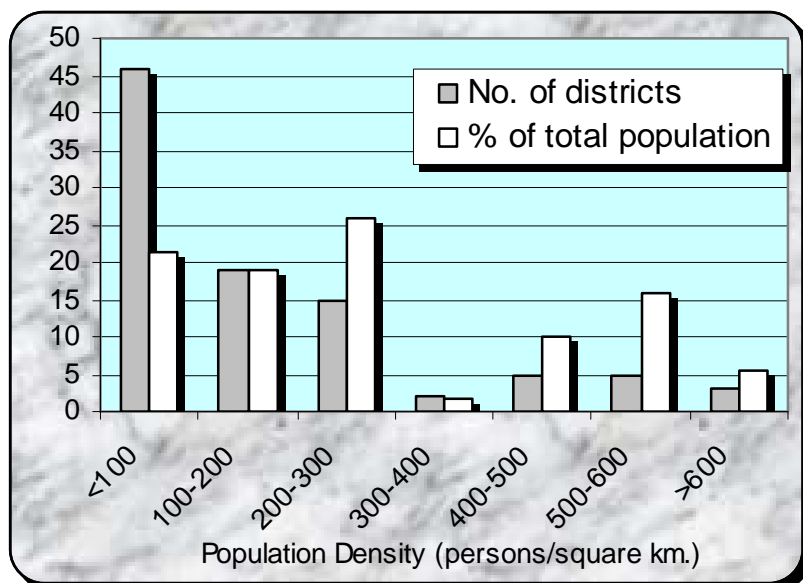


Figure 8: Population distribution among the districts of the IHR.

Sex ratio

The sex ratio (females per 1000 males) is mainly the outcome of the interplay of sex differentials in mortality, selective migration and sex differential in population enumeration. Changes in sex composition largely reflect the underlying socio-economic and cultural pattern of a society in different ways. The impressive status of sex composition in the Himalayan region (940 as compared to 933 against the national average) seems to be under threat due to changing social norms. The sex ratio of most of the IHR districts varies between 900 and 1000 and is depicted in Figure 9.

Two states in the north-east, i.e. Manipur and Sikkim recorded the highest (978) and the lowest (875) sex ratios, respectively, in the region. At district level, Almora district (Uttaranchal) recoded the highest (1147) and West Kameng (Arunachal Pradesh) recorded the lowest (749) sex ratio in the region.

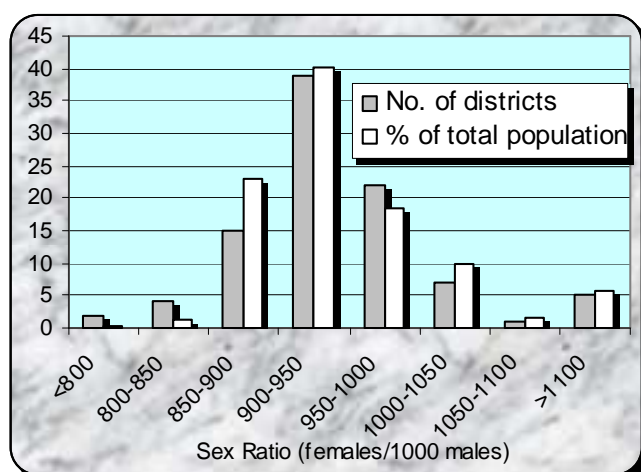


Figure 9: Variation of sex ratio across the districts of the IHR.

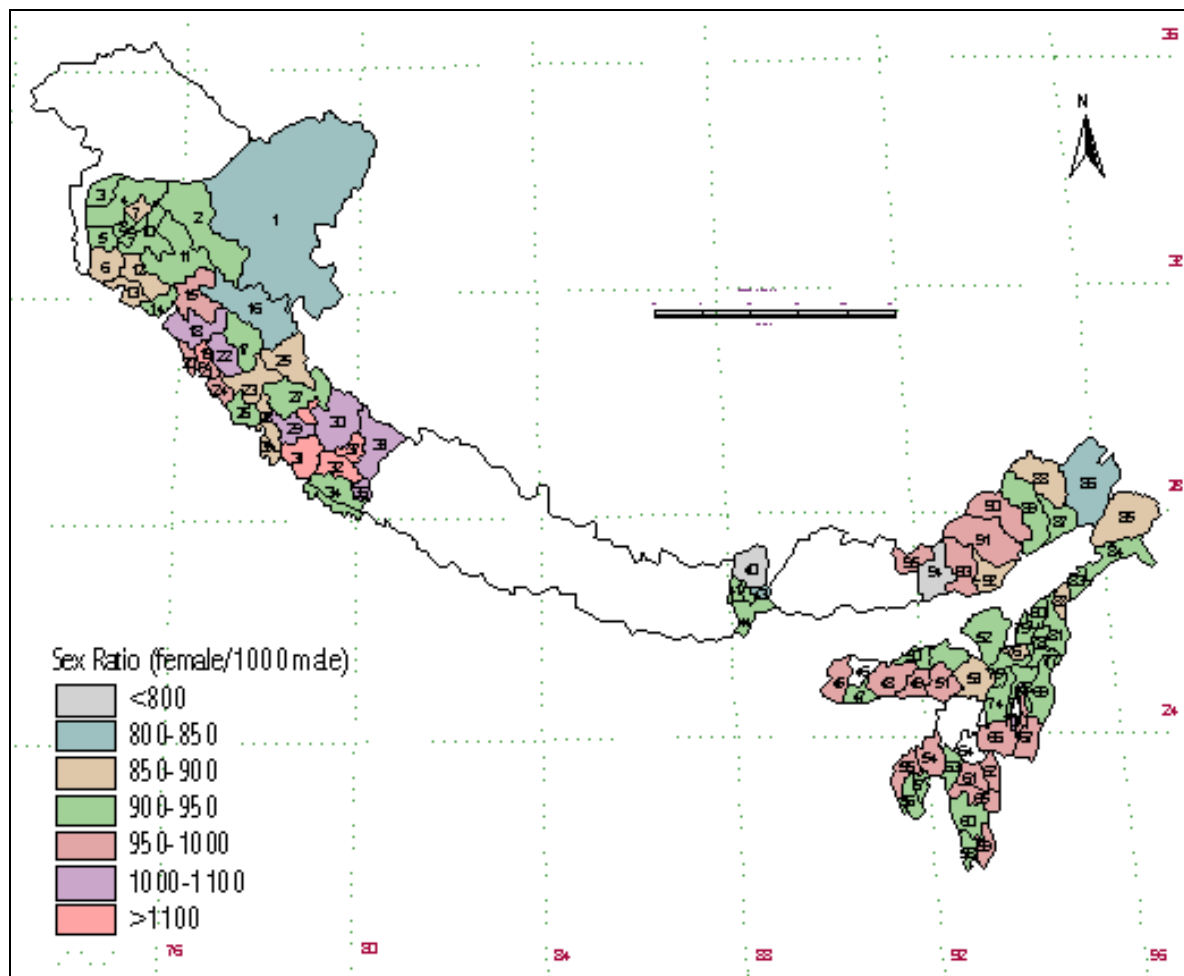


Figure 10: Distribution of sex ratio among the districts of the IHR.

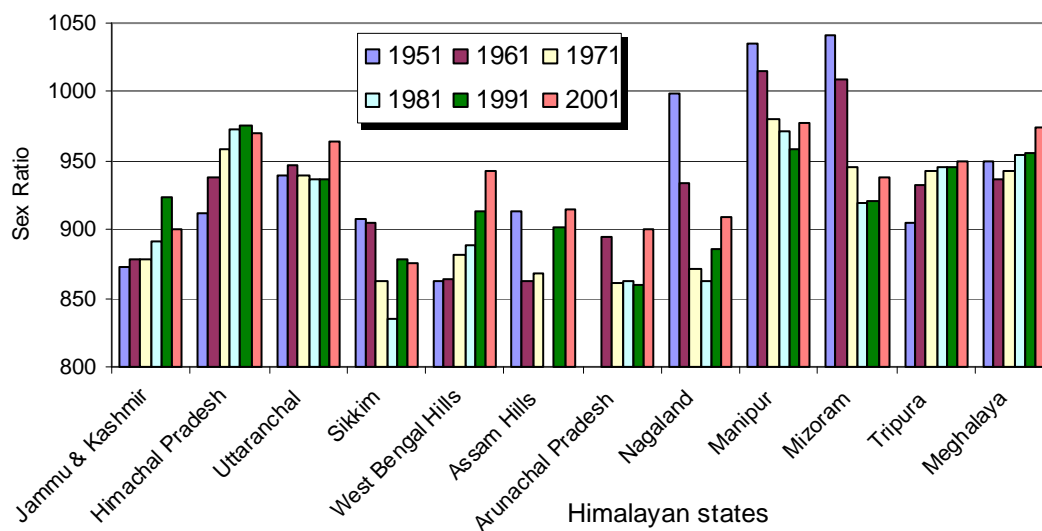


Figure 11: Statewise changing sex ratio (1951-2001) in the IHR.

Literacy

The literacy rate of the IHR (about 67%) is marginally higher than the literacy rate of the country (65.38%) as recorded in 2001. Majority of the districts have literacy rates higher than the region’s average. In the north-east, Mizoram recorded the highest literacy (88.49%) whereas Jammu & Kashmir in western Himalaya recorded the least literacy (54.46%) among all the IHR states. Districts of these states also reflected the same trends as Aizwal (Mizoram) recorded the highest (96.64%) and Badgam (Jammu & Kashmir) recorded the lowest (39.54%) literacy among the districts of the region.

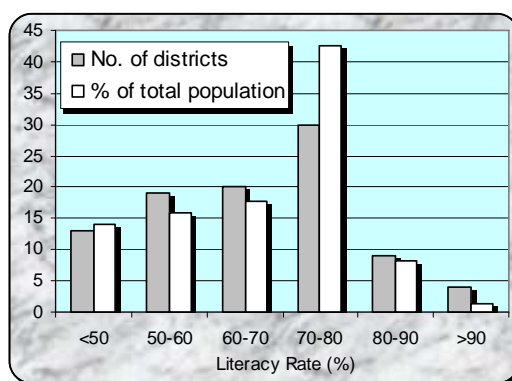


Figure 12: Variation of literacy across the districts of the IHR.

The distribution of literacy across the Himalayan region is as follows (Figure 13). In India this is very true that growth rate of human population has decreased significantly in the states with higher literacy rates.

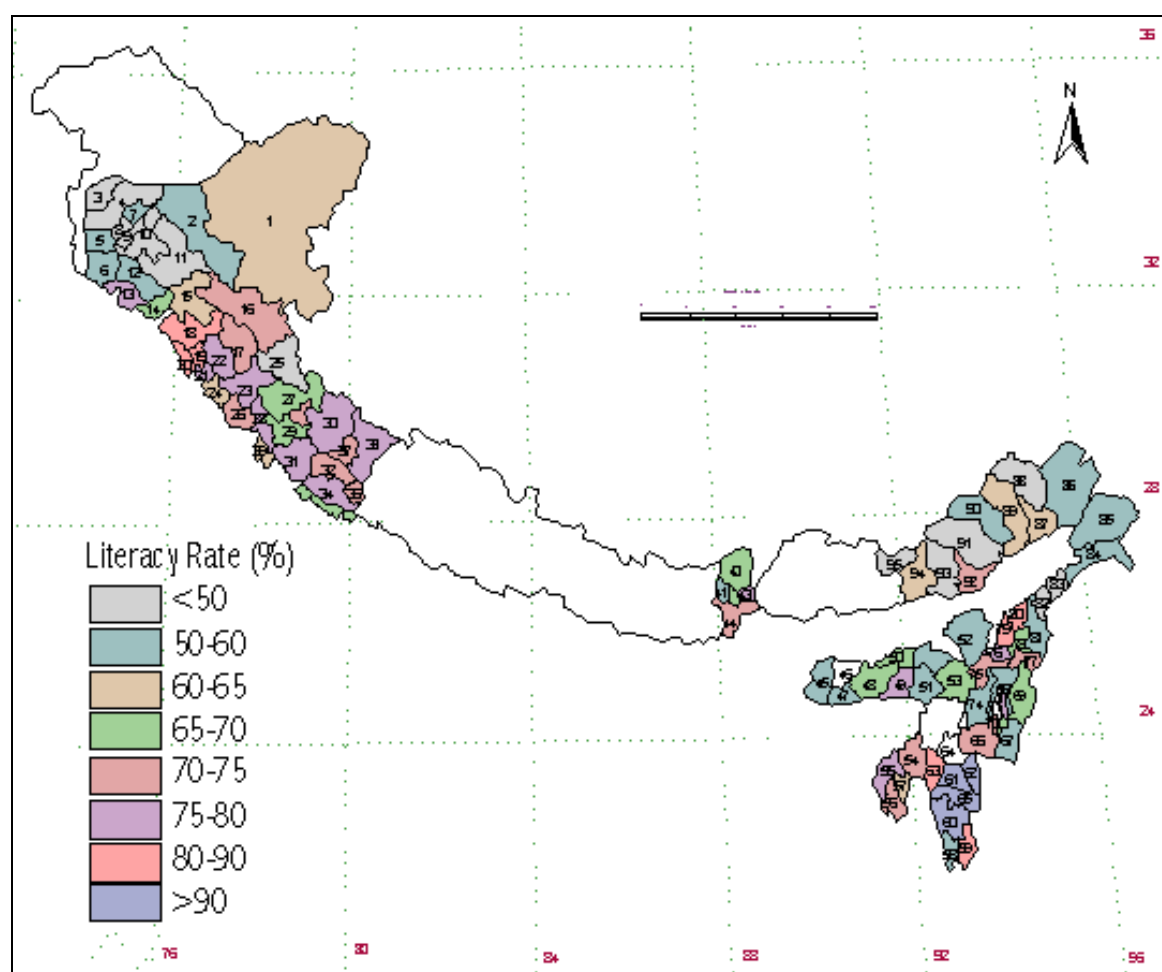


Figure 13: Literacy distribution across the districts of the IHR.

Energy

Energy security has an important bearing on achieving national economic development goals and improving the quality of life of the people. The level of per capita energy consumption has long been considered as one of the key indicators of the economic development. Per capita consumption of energy (specifically electricity) is growing very fast in the region. This leads to cater the alternative source of energy nationwide.

The search for alternative fuels (non-conventional) that would ensure sustainable development on one hand and energy security on the other began in the 1970s. Subsequently, new and renewable sources of energy have emerged as alternative options. The country has a policy framework in place to tap the potential for renewable energy such as solar, wind, biomass and small hydro irrespective of the capacity. In this direction different schemes are being assisted by the government.

Table 15: Annual per capita consumption of electricity in the IHR states (2000-01).

| States/UTs | Domestic Light | Commercial Light | Industrial including Traction Water works and Misc. | Public Lighting | Agricultural | Total | Non-Utilities | Total (K.W.H.) |
|-------------------|----------------|------------------|---|-----------------|--------------|--------|---------------|----------------|
| Jammu and Kashmir | 127.38 | 35.54 | 104.20 | 3.42 | 14.13 | 284.67 | 0.02 | 284.69 |
| Himachal Pradesh | 94.02 | 23.87 | 203.87 | 1.24 | 2.84 | 325.84 | 10.42 | 333.26 |
| Sikkim | 92.18 | 32.32 | 31.25 | 28.45 | - | 184.20 | - | 184.20 |
| Meghalaya | 61.17 | 19.23 | 87.48 | 0.86 | 0.14 | 168.88 | - | 168.88 |
| Tripura | 28.95 | 7.10 | 26.37 | 1.59 | 15.09 | 79.10 | - | 79.10 |
| Mizoram | 101.25 | 10.13 | 23.19 | 7.94 | - | 142.51 | - | 142.51 |
| Manipur | 38.52 | 4.85 | 23.98 | 1.87 | 0.16 | 69.38 | - | 69.38 |
| Nagaland | 55.44 | 6.81 | 31.58 | 2.92 | - | 96.75 | - | 96.75 |
| Arunachal Pradesh | 56.61 | 9.92 | 8.06 | 10.00 | - | 84.59 | - | 84.59 |

Note: Figures are provisional. Data for Uttranchal state and hill regions of Assam and West Bengal are not available.

[Source: Statistical Abstract of Punjab 2002, Govt. of Punjab]

Table 16: Release of Central Assistance (CA) and area covered under afforestation schemes in the IHR. (Rs. in lakhs, Area in ha.)

| States | VIII Plan | | IX Plan (First Three Years) | |
|------------------|-------------|--------------|-----------------------------|--------------|
| | CA Released | Area Covered | CA Released | Area Covered |
| Jammu & Kashmir | 127.01 | 3291 | 162.64 | 2879 |
| Himachal Pradesh | 627.94 | 11181 | 382.06 | 6872 |
| Sikkim | 327.62 | 6971 | 206.69 | 1810 |
| Meghalaya | 292.56 | 6133 | 0 | - |
| Tripura | 176.26 | 8861 | 127.49 | 3842 |
| Mizoram | 1634.75 | 46090 | 629.25 | 11000 |
| Manipur | 520.88 | 16585 | 356.29 | 6170 |

| | | | | |
|-------------------|-------|------|------|---|
| Nagaland | 25.15 | 2130 | 15.1 | - |
| Arunachal Pradesh | 54.49 | 960 | 13 | - |

Data for Uttarakhand state and hill regions of Assam and West Bengal are not available.

[Source: Forestry Statistics India 2000, Indian Council of Forestry Research & Education]

Table 17: Fodder production in the IHR. (1997-98 to 1999-2000) (in tonnes)

| States | 1997-98 | 1998-99 | 1999-2000 |
|-------------------|---------|---------|-----------|
| Jammu & Kashmir | 3200000 | 3200000 | NA |
| Himachal Pradesh | 7800 | 7800 | 7800 |
| Sikkim | 500000 | 550000 | NA |
| Meghalaya | 3722 | 4500 | 5000 |
| Mizoram | 55110 | 108500 | 63500 |
| Manipur | 2840000 | 2840000 | 2840000 |
| Arunachal Pradesh | 4980 | 5179 | 9838 |

Data for Nagaland, Tripura, Uttarakhand and hill regions of Assam and West Bengal are not available.

[Source : Lok Sabha Unstarred Question No. 2858 dated 09.08.2000]

Table 18: Estimated electricity generated from non-conventional energy projects (2002-2003) in the IHR.

| States | Electricity generated (in mega watt) |
|-------------------|--------------------------------------|
| Jammu & Kashmir | 280 |
| Himachal Pradesh | 274 |
| Uttarakhand | 185 |
| Sikkim | 98 |
| Meghalaya | 92 |
| Tripura | 48 |
| Mizoram | 44 |
| Manipur | 14 |
| Nagaland | 60 |
| Arunachal Pradesh | 97 |

Data for hill regions of Assam and West Bengal are not available.

Infrastructure

To combat poverty and attain human development in the mountain ecosystem of the IHR on a sustainable basis there is no better alternative than making available essential infrastructural (economic and social) facilities and services (Sadeque, 1997). While economic growth could be achieved with freeing of markets and the development of an excellent infrastructure, human development is possible through provisioning of social infrastructure (access to education and health care facilities). For economically and socially disadvantaged people of this ecosystem, access to basic economic and social infrastructure is perhaps more important as they start with a disadvantage to benefit from mainstream national development initiatives. While the economic infrastructures will help the people sustain their economic growth, the essential social infrastructures are critical in fostering human development and creating opportunities for people to be better equipped to graduate from the threshold of poverty (Sadeque, 1997). An educated and healthy workforce can be able to make advantage of the present globalization and information technology. Poverty needs to be addressed through infrastructural development, which has the potential to meet livelihood challenges and economic and social security.

Medical facilities

Health is an important component of social and economic development. It is also an essential input for the development of the human resources and the quality of life and in turn the social and economic development of a nation or region. A positive health status is defined as a state of complete physical, mental and social well being and not merely the absence of disease or infirmity. Being a positive attribute of life, organization of health services to all people is considered the key step towards development. Provision of basic health care service to the people through medical infrastructure is an essential component of development process. Provisioning of health care infrastructure in the IHR is given in table 19.

Table 19: Number of functioning primary health centres (PHCs), sub-centres and community health centres (CHCs) in the states of IHR (1998-99).

| States/UTs | Primary Health Centres | Sub-centres | Community Health Centres |
|-------------------|------------------------|------------------|--------------------------|
| Jammu & Kashmir | 337 | 1700 | 53 |
| Himachal Pradesh | 312 | 2069 | 55 |
| Uttaranchal* | 228 ^s | 325 [#] | 36 |
| Sikkim | 24 | 147 | 2 |
| Meghalaya | 85 | 377 | 13 |
| Tripura | 58 | 537 | 11 |
| Mizoram | 55 | 336 | 6 |
| Manipur | 69 | 420 | 16 |
| Nagaland | 33 | 245 | 5 |
| Arunachal Pradesh | 45 | 245 | 9 |

*Figures of 2002-2003; [#]no. of government allopathic hospitals; ^sincluded additional PHCs
Data for hill regions of Assam and West Bengal are not available.

Note: Figures are provisional.

[Source : Lok Sabha Unstarred Question No. 2281 dated 07.08.2000]

Educational institutions

There are about 53,294 primary/junior basic schools, 13,918 upper/senior basic schools and 9,253 high/higher secondary schools functioning in the IHR (Table 20). The three larger states (viz. Jammu & Kashmir, Uttaranchal and Himachal Pradesh) share about 66% of total primary schools in the region, particularly the state of Uttaranchal, which is having the largest number of schools in the region besides a good infrastructure of higher education.

Table 20: Recognized educational institutions in the IHR (2002-2003).

| States/Regions | Primary/ Jr. Basic School | Upper/ Middle/ Sr. Basic School | Secondary/ Higher Secondary/ Intermediate/ Jr. College | Colleges | Professional educational institute | University/ Deemed university/ Institute of National Importance |
|-------------------|---------------------------|---------------------------------|--|----------|------------------------------------|---|
| Jammu & Kashmir | 10488 | 3976 | 1893 | 73 | 18 | 5 |
| Himachal Pradesh | 10868 | 1902 | 2139 | 69 | 13 | 8 |
| Uttaranchal | 13902 | 3471 | 1827 | 47 | 4 | 7 |
| Sikkim | 497 | 129 | 138 | 2 | 3 | 2 |
| West Bengal hills | 1167 | 78 | 184 | 11 | 4 | 1 |
| Meghalaya | 5807 | 1083 | 641 | 44 | 2 | 1 |

| | | | | | | |
|-------------------|------|-----|-----|-----------------|---|---|
| Assam hills | 2017 | 415 | 230 | 27 [#] | - | - |
| Tripura | 2054 | 435 | 643 | 14 | 3 | 1 |
| Mizoram | 1253 | 848 | 388 | 27 | 2 | 1 |
| Manipur | 2552 | 794 | 687 | 58 | 5 | 2 |
| Nagaland | 1352 | 427 | 279 | 35 | 2 | 1 |
| Arunachal Pradesh | 1337 | 360 | 204 | 8 | 1 | 1 |

[Source: Selected Educational Statistics 2002-03, Ministry of Human Resource Development; 7th All India School Education Survey, NCERT, New Delhi]

[#]Included colleges having class XI & XII

Note: Figures are provisional.

Professional education includes engineering, technology/architecture, medical and teacher training colleges.

One junior basic school (JBS) serves the highest number of population in Tripura followed by Nagaland and West Bengal hills. The lowest number of population is served by a JBS in Meghalaya followed by Assam hills and Himachal Pradesh. Though, one JBS in Mizoram serves about 711 populations, still then, it recorded the highest percentage of literacy in the region. In higher education, all the states/regions have a university except Assam hills.

Table 21: University institutions in the IHR.

| States/Regions | University |
|-------------------|--|
| Jammu & Kashmir | University of Jammu, Jammu Tawi University of Kashmir, Srinagar Sher-e-Kashmir Univ. of Agricultural Sciences & Technology, Srinagar Shri Mata Vaishno Devi University, Jammu |
| Himachal Pradesh | Himachal Pradesh University, Shimla C.S.K. Himachal Pradesh Krishi Vishwavidyalaya, Palampur Dr. Y.S. Parmar University of Horticulture & Forestry, Solan Jaypee University of Information Technology, Wanknaghat |
| Uttaranchal | Kumaun University, Nainital H.N.B. Garhwal University, Srinagar (Garhwal) G.B. Pant University of Agriculture & Technology, Pantnagar Gurukul Kangri Vishwavidyalaya, Haridwar Forest Research Institute, Dehradun Indian Institute of Technology, Roorkee Dev Sanskriti Vishwavidyalaya, Haridwar |
| Sikkim | Sikkim Manipal University of Health, Medical & Technological Sciences, Gangtok |
| W. Bengal hills | North Bengal University, Darjeeling |
| Meghalaya | North Eastern Hill University*, Shillong |
| Tripura | Tripura University, Agartala |
| Mizoram | Mizoram University*, Aizwal |
| Manipur | Manipur University, Imphal Central Agricultural University*, Imphal |
| Nagaland | Nagaland University*, Kohima |
| Arunachal Pradesh | Rajiv Gandhi University, Itanagar |

*Central Universities

[Source : Universities Handbook 2004, New Delhi]

Universities like Doon University, Uttaranchal Technical University, University of Petroleum and Energy Studies, Open University, The Institute of Chartered Financial Analysts of India (ICFAI) University, etc., are also exist in Uttaranchal. Besides above, there are a number of institutes of national importance, such as G.B. Pant Institute of Himalayan Environment & Development, Almora; LBS National Academy of Administration, Mussoorie; the Indian Institute of Petroleum, Dehradun; National Institute of Technology, Hamirpur; and, North Eastern Regional Institute of Science and Technology, Nirjuli (Arunachal Pradesh), etc., are in the IHR.

The following table depicts the number of students per teacher in different level of school education in the states of the IHR.

Table 22: Pupil-teacher ratio in different categories of schools in the IHR.

| States | Primary | | | Upper Primary | | | Secondary | | | Higher Secondary | | |
|-------------------|---------|-------|-------|---------------|-------|-------|-----------|-------|-------|------------------|-------|-------|
| | Rural | Urban | Total | Rural | Urban | Total | Rural | Urban | Total | Rural | Urban | Total |
| Jammu & Kashmir | 21 | 11 | 19 | 20 | 14 | 18 | 21 | 17 | 19 | 23 | 26 | 25 |
| Himachal Pradesh | 22 | 23 | 22 | 15 | 13 | 15 | 25 | 20 | 24 | 24 | 24 | 24 |
| Uttaranchal | 29 | 27 | 29 | 19 | 22 | 19 | 22 | 23 | 22 | 27 | 33 | 29 |
| Sikkim | 12 | - | 12 | 15 | 18 | 15 | 17 | 22 | 18 | 19 | 23 | 19 |
| Meghalaya | 21 | 24 | 22 | 16 | 21 | 17 | 17 | 21 | 18 | 23 | 24 | 23 |
| Tripura | 23 | 21 | 23 | 20 | 16 | 20 | 23 | 22 | 23 | 23 | 23 | 23 |
| Mizoram | 21 | 16 | 19 | 9 | 14 | 11 | 11 | 15 | 13 | 10 | 24 | 22 |
| Manipur | 23 | 15 | 21 | 17 | 17 | 17 | 20 | 19 | 19 | 22 | 19 | 20 |
| Nagaland | 12 | 7 | 12 | 12 | 17 | 13 | 17 | 25 | 20 | 25 | 28 | 27 |
| Arunachal Pradesh | 28 | 22 | 27 | 25 | 27 | 25 | 26 | 33 | 27 | 27 | 31 | 29 |

Data for Assam and West Bengal hills are not available.

[Source: 7th All India School Education Survey 2002, NCERT, New Delhi]

Drinking water

Based on availability of census data, it was observed that almost all the inhabited villages in the IHR have access to one or other sources of drinking water. However, the percentage of households having safe drinking water facility in the IHR varies significantly and there is substantial decadal change in the last two decades (Table 23). Himachal Pradesh and Uttaranchal share the higher percentage (more than 80%) of their households having access to safe drinking water facility in the IHR, while in Mizoram only about 36% of households have drinking water facility.

Table 23: Access to drinking water facility in the IHR. (Percentage households)

| States | 1981 | | | 1991 | | | 2001 | | |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | Total | Rural | Urban | Total | Rural | Urban | Total | Rural | Urban |
| Jammu & Kashmir | 40.3 | 28.0 | 86.7 | NA | NA | NA | 65.2 | 54.9 | 95.7 |
| Himachal Pradesh | 44.5 | 39.6 | 89.6 | 77.3 | 75.5 | 91.9 | 88.6 | 87.5 | 97.0 |
| Uttaranchal* | - | - | - | - | - | - | 86.7 | 83.0 | 97.8 |
| Sikkim | 30.3 | 21.7 | 71.9 | 73.1 | 70.8 | 92.8 | 70.7 | 67.0 | 97.1 |
| Meghalaya | 25.1 | 14.3 | 74.4 | 36.2 | 26.8 | 75.4 | 39.0 | 29.5 | 73.5 |
| Tripura | 27.3 | 22.2 | 67.9 | 37.2 | 30.6 | 71.1 | 52.5 | 45.0 | 85.8 |
| Mizoram | 4.9 | 3.6 | 8.8 | 16.2 | 12.9 | 19.9 | 36.0 | 23.8 | 47.8 |
| Manipur | 19.5 | 12.9 | 38.7 | 38.7 | 33.7 | 52.1 | 37.0 | 29.3 | 59.4 |

| | | | | | | | | | |
|-------------------|------|------|------|------|------|------|------|------|------|
| Nagaland | 45.6 | 43.4 | 57.2 | 53.4 | 55.6 | 45.5 | 46.5 | 47.5 | 42.3 |
| Arunachal Pradesh | 43.9 | 40.2 | 87.9 | 70.0 | 66.9 | 88.2 | 77.5 | 73.7 | 90.7 |

Data for Assam and West Bengal hills are not available.

* Created on 2001; NA: Not available as no census was carried out in Jammu & Kashmir during 1991

[Source: Office of the Registrar General, India]

Electricity

The rural electrification in the IHR villages is quite impressive against the national average figure (about 80.8%) of electrified villages. In the states of Nagaland, Himachal Pradesh and Mizoram all the villages are almost electrified (Table 24). However, states like Meghalaya and Arunachal Pradesh are lagging behind in village electrification programme.

Table 24: Villages having access to electricity in the IHR.

| States | Inhabited villages as per 1991 Census | Total electrified villages as on March 2004 | % of electrified villages |
|-------------------|---------------------------------------|---|---------------------------|
| Jammu and Kashmir | 6477 | 6301 | 97.28 |
| Himachal Pradesh | 16997 | 16891 | 99.38 |
| Uttaranchal | 15681 | 13131 | 83.74 |
| Sikkim | 447 | 405 | 90.60 |
| Meghalaya | 5484 | 3016 | 55.00 |
| Tripura | 855 | 818 | 95.67 |
| Mizoram | 698 | 691 | 99.00 |
| Manipur | 2182 | 2043 | 93.63 |
| Nagaland | 1216 | 1216 | 100.00 |
| Arunachal Pradesh | 3649 | 2335 | 63.99 |

Data for Assam and West Bengal hills are not available.

[Source : Rajya Sabha Unstarred Question No. 67 dated 07.07.2004]

Road and rail network

The particulars of road and rail networks in the states of the IHR are given in table 25.

Table 25: Road length and railway tracks in the IHR (1997). (in km)

| States | Surfaced | Un-surfaced | Total | Rail Route* |
|-------------------|----------|-------------|-------|-------------|
| Jammu & Kashmir | 8225 | 13221 | 21446 | 96 |
| Himachal Pradesh | 15143 | 15050 | 30193 | 269 |
| Uttaranchal | - | - | - | 356 |
| Sikkim | 1527 | 307 | 1834 | 0 |
| Meghalaya | 3923 | 4557 | 8480 | 0 |
| Tripura | 4577 | 10152 | 14729 | 45 |
| Mizoram | 1983 | 2846 | 4829 | 2 |
| Manipur | 3598 | 7343 | 10941 | 1 |
| Nagaland | 5241 | 13115 | 18356 | 13 |
| Arunachal Pradesh | 3991 | 10101 | 14092 | 1 |

Data for hill regions of Assam and West Bengal are not available.

[Source: Motor Transport Statistics of India 1997-98, Ministry of Surface Transport, Government of India]

*2000-2001 data, Year Book 2000-01, Indian Railways.

The main railway station in the region from where important trains originate are: Jammu (Jammu & Kashmir), Rishikesh, Dehradun and Kathgodam (Uttaranchal), New Jalpaiguri (West Bengal) and Dimapur (Nagaland). Besides, Shimla (Himachal Pradesh) and Darjeeling (W. Bengal hills) are also connected by narrow gauge railway tracts.

Table 26: Allocation of funds under different schemes for surface transport development in the IHR (2000-2001). (Rs in lakh)

| States | NH(O) | EAP | SRP | M&R | P.B.F.F. |
|------------------|---------|------|--------|---------|----------|
| Jammu & Kashmir | 150.00 | 0.00 | 0.00 | 274.42 | 0.00 |
| Himachal Pradesh | 4700.00 | 0.00 | 839.68 | 1877.26 | 0.00 |
| Uttaranchal | 293.44 | 0.00 | 0.00 | 417.01 | 0.00 |
| Meghalaya | 2000.00 | 0.00 | 318.12 | 798.59 | 58.34 |
| Mizoram | 1200.00 | 0.00 | 286.21 | 670.22 | 0.00 |
| Manipur | 1250.00 | 0.00 | 0.00 | 824.49 | 1.31 |
| Nagaland | 1500.00 | 0.00 | 0.00 | 361.25 | 0.00 |

Data for Sikkim, Tripura, Arunachal Pradesh and hill regions of Assam and West Bengal are not available.
P.B.F.F.: Permanent Bridge Free Fund; NH: National Highway; SRP: Special Repair Programme; M&R: Maintenance & Repair; EAP : Externally aided Projects.
[Source: Annual Report 2000-2001, Ministry of Road Transport & Highways, Government of India]

Postal network

In the mountainous states of the IHR, population density is quite low and the population is highly dispersed. Probably this is the reason of average population served by one post office in this region is comparatively lower than the national average (Table 27).

Table 27: Average area and population served per Post Office in the states of IHR.

| Postal Circle | Average Area Served (in km ²) | Average Population Served |
|-------------------|---|---------------------------|
| Jammu & Kashmir | 135.57 | 4711 |
| Himachal Pradesh | 20.15 | 1849 |
| Sikkim | 34.80 | 2009 |
| Meghalaya | 46.37 | 3643 |
| Tripura | 14.62 | 3853 |
| Mizoram | 53.14 | 1738 |
| Manipur | 32.36 | 2656 |
| Nagaland | 51.56 | 3812 |
| Arunachal Pradesh | 284.69 | 2925 |
| India | 21.32 | 5477 |

Data for Uttaranchal and hill regions of Assam and West Bengal are not available.
[Source : Rajya Sabha Unstarred Question No. 3247 dated 25.04.2000]

DEVELOPMENT INDICATORS

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Human development index

The human development index (HDI) is a summary measure of human resource development. It measures the average achievements in a country in three basic dimensions of human development viz. healthy life, knowledge and standard of living. These three qualitative measures are supported by quantitative parameters such as life expectancy at birth, literacy/education and per capita GDP respectively.

Table 1: Human development indicators in the IHR.

| States | Female Workers Participation Rate | Basic Indicators of Human Development | | | | | | | | | |
|-------------------|-----------------------------------|---------------------------------------|---------|-------|----------------------------------|---------|---------|------------|------------|--------------------------|---|
| | | Literacy Percentage ++ | | | Life Expectancy at Birth (Years) | | | Birth Rate | Death Rate | Infant Mortality Rate @@ | Per Capita Income at Current Prices (Rs.) (P) |
| | | Males | Females | Total | Males | Females | | | | | |
| | | 2001 | 2001-06 | | 2000 | | 2000-01 | | | | |
| Jammu & Kashmir | 21.96 | 65.75 | 41.82 | 54.46 | N.A. | N.A. | 19.7 | 6.2 | 50 | 12399 | |
| Himachal Pradesh | 43.69 | 86.02 | 68.08 | 77.13 | N.A. | N.A. | 22.1 | 7.2 | 60 | 18920 | |
| Uttaranchal | 27.09 | 84.01 | 60.26 | 72.28 | 63.54 | 64.09 | 20.2 | 6.9 | 50 | N.A. | |
| Sikkim | 38.59 | 76.73 | 61.46 | 69.68 | N.A. | N.A. | 21.8 | 5.7 | 49 | 15550 | |
| Meghalaya | 35.02 | 66.14 | 60.41 | 63.31 | N.A. | N.A. | 28.5 | 9.2 | 58 | 13114 | |
| Tripura | 21.02 | 81.47 | 65.41 | 73.66 | N.A. | N.A. | 16.5 | 5.4 | 41 | 14348 | |
| Mizoram | 47.63 | 90.69 | 86.13 | 88.49 | N.A. | N.A. | 16.0 | 5.2 | 21 | N.A. | |
| Manipur | 40.51 | 77.87 | 59.70 | 68.87 | N.A. | N.A. | 18.3 | 5.6 | 23 | N.A. | |
| Nagaland | 38.25 | 71.77 | 61.92 | 67.11 | N.A. | N.A. | 11.8 | 2.3 | N.A. | N.A. | |
| Arunachal Pradesh | 36.45 | 64.07 | 44.24 | 54.74 | N.A. | N.A. | 22.3 | 6.0 | 44 | 14587 | |
| India * | @25.68 | 75.85 | 54.16 | 65.38 | 64.11 | 65.43 | 25.8 | 8.5 | 68 | 16072 | |

Data for Assam and West Bengal hills are not available.

Note: * Included Union Territories; @Excluded Jammu and Kashmir; @@: Infant mortality rates for smaller States and Union territories are based on three year (1998-00) moving averages; ++ the literacy rates relate to the Population aged seven and above; N.A.: Not available.

[Source: Economic Survey of Maharashtra 2002-03, Directorate of Economics & Statistics, Planning Department, Government of Maharashtra]

Apart from the above, many other indicators of development such as gender disparity, socio-economy, urban settlements, economic growth, industry and commerce, workforce, eco-tourism, micro credits and yield of food grains, etc, also depict stages of human resource development, which could be assessed from the following tables.

Table 2: HDI and gender disparity index (1991) in the states of the IHR.

| States | Rural | Urban | Combined | Gender Disparity Index |
|-------------------|-------|-------|----------|------------------------|
| Jammu & Kashmir | 0.364 | 0.575 | 0.402 | 0.740 |
| Himachal Pradesh | 0.442 | 0.700 | 0.469 | 0.858 |
| Sikkim | 0.398 | 0.618 | 0.425 | 0.647 |
| Meghalaya | 0.332 | 0.624 | 0.365 | 0.807 |
| Tripura | 0.368 | 0.551 | 0.389 | 0.531 |
| Mizoram | 0.464 | 0.648 | 0.548 | 0.770 |
| Manipur | 0.503 | 0.618 | 0.536 | 0.815 |
| Nagaland | 0.442 | 0.633 | 0.486 | 0.729 |
| Arunachal Pradesh | 0.300 | 0.572 | 0.328 | 0.776 |
| India | 0.340 | 0.511 | 0.381 | 0.676 |

Data for Uttaranchal and hills of Assam and West Bengal are not available.
[Source : Rajya Sabha Unstarred Question No. 5459 dated 17.05.2002]

Table 3: Selected socio-economic indicators of the IHR.

| States/UTs | Population (In Lakh) | Density of Population | % of Urban Population to Total Population | % of State Population to All India Population | Decennial Growth Rate of Population (%) 1991- 2001 | Sex Ratio | % of Main Workers to Total Population | % Age of Agricultural Workers to Total Workers |
|-------------------|-------------------------|--------------------------|--|--|---|--------------|--|--|
| Jammu & Kashmir | 100.70 | 99 | 24.88 | 0.98 | 30.46 | 900 | 25.19 | 50.10 |
| Himachal Pradesh | 60.77 | 109 | 9.80 | 0.59 | 17.53 | 970 | 33.36 | 68.65 |
| Uttranchal | 84.80 | 159 | 25.59 | 0.83 | 20.27 | 964 | 27.39 | 58.03 |
| Sikkim | 5.40 | 76 | 11.10 | 0.05 | 32.98 | 875 | 39.31 | 56.34 |
| W. Bengal Hills | 16.06 | 510 | 34.44 | 0.16 | 23.54 | 943 | 29.73 | NA |
| Meghalaya | 23.06 | 103 | 19.63 | 0.22 | 29.94 | 975 | 32.21 | 65.89 |
| Assam Hills | 9.99 | 65 | 15.11 | 0.10 | 22.74 | 915 | 28.44 | 69.94 |
| Tripura | 31.91 | 304 | 17.02 | 0.31 | 15.74 | 950 | 28.41 | 50.92 |
| Mizoram | 8.91 | 42 | 49.50 | 0.09 | 29.18 | 938 | 40.83 | 59.77 |
| Manipur | 23.89 | 107 | 24.12 | 0.23 | 30.02 | 978 | 31.68 | 57.38 |
| Nagaland | 19.89 | 120 | 17.74 | 0.19 | 64.41 | 909 | 35.63 | 68.03 |
| Arunachal Pradesh | 10.91 | 13 | 20.34 | 0.11 | 26.21 | 901 | 37.71 | 62.30 |
| India * | 10270.15 | @ 324 | @ 27.78 | @ 100 | 21.34 | @ 933 | @30.55 | @58.40 |

Note: *Included Union Territories; @Excluded Jammu and Kashmir
[Source: Economic Survey of Maharashtra 2002-03, Directorate of Economics & Statistics, Planning Department, Government of Maharashtra]

Urban settlements

Table 4: Number of towns in the IHR (2001).

| State/region | C.T. | C.B. | T.C. | M.C. | M.B. | M.Cl. | M | M.Corp. | N.P. | N.A.C. | Other towns | Total |
|-------------------|------|------|------|------|------|-------|---|---------|------|--------|-------------|-------|
| Jammu & Kashmir | 2 | 2 | 5 | 3 | - | - | - | - | - | 63 | - | 75 |
| Himachal Pradesh | 1 | 7 | - | 4 | - | 16 | - | 1 | 28 | - | - | 57 |
| Uttaranchal | 12 | 9 | - | - | 32 | - | - | 1 | 30 | - | 2 | 86 |
| Sikkim | 1 | - | - | - | - | - | - | - | - | - | 8 | 9 |
| W. Bengal Hills | - | - | - | - | - | - | 3 | 1 | - | 1 | 4 | 9 |
| Meghalaya | 6 | 1 | 3 | - | 4 | - | 2 | - | - | - | - | 16 |
| Assam Hills | - | - | 9 | - | - | - | - | - | - | - | - | 9 |
| Tripura | 10 | - | - | - | - | 1 | - | - | 12 | - | - | 23 |
| Mizoram | 21 | - | - | - | - | - | - | - | - | - | 1 | 22 |
| Manipur | 5 | - | - | - | - | 7 | - | - | 20 | - | 1 | 33 |
| Nagaland | 1 | - | 8 | - | - | - | - | - | - | - | - | 9 |
| Arunachal Pradesh | 17 | - | - | - | - | - | - | - | - | - | - | 17 |

C.T.: Census Town;

C.B.: Cantonment Board/Cantonment;

T.C.: Town Committee/Town Area Committee;

M.: Municipality; M.B.: Municipal Board;

M.C.: Municipal Committee;

M.Cl.: Municipal Council;

M.Corp.: Municipal Corporation;

N.P.: Nagar Panchayat;

N.A.C.: Notified Area Committee/Notified Area Council

[Source : Census 2001]

Economic indicators

Table 5: Growth rate of GSDP at constant 1993-94 prices in the IHR (1996-97 to 1999-2000).

| States | Growth Rate (%) |
|-------------------|-----------------|
| Jammu & Kashmir | 5.5 |
| Himachal Pradesh | 6.5 |
| Sikkim | 9.6 |
| Meghalaya | 6.3 |
| Tripura | 8.4 |
| Mizoram | NA |
| Manipur | 6.8 |
| Nagaland | NA |
| Arunachal Pradesh | 5.1 |
| India GDP | 5.8 |

Data for Uttaranchal and hill regions of Assam and West Bengal are not available.

GSDP: Gross State Domestic Product.

[Source : Lok Sabha Unstarred Question No. 557 dated 17.07.2002]

Table 6: Growth rate of per capita income in India (1997-2001).

| State | Growth Rate (% annum) |
|--------------------------|-----------------------|
| Jammu & Kashmir* | 2.1 |
| Himachal Pradesh | 4.6 |
| Sikkim* | 6.0 |
| Meghalaya | 4.0 |
| Tripura | 4.5 |
| Manipur | 8.4 |
| Nagaland* | -4.1 |
| Arunachal Pradesh | 1.1 |
| All India per capita NNP | 3.3 |

Data for Uttaranchal, Mizoram and hill regions of Assam and West Bengal are not available.

Note : *Per capita income growth rate for first three years of the Ninth five year plan.

[Source : Lok Sabha Unstarred Question No. 1528 dated 27.11.2002]

Table 7: Industry and commerce in the IHR.

| States | Per capita gross output in industries (Rs.) (P) | Per capita value added in industries (Rs.) (P) | Domestic consumption of electricity per capita (Kwh.) (P) | Industrial consumption of electricity per capita (Kwh.) (P) @ | Motor vehicles per lakh of population (No.) | Total road length per hundred km ² of area (Km.) ** | Number of fair price/ration shops per lakh of population | Scheduled Commercial Banks | | |
|-------------------|---|--|---|---|---|--|--|--|--------------------------|------------------------------|
| | | | | | | | | Number of banking offices per lakh of population (No.) | Deposit per capita (Rs.) | Bank credit per capita (Rs.) |
| | 2000-01 | | 1999-00 | | 31-03-00 | 31-03-99 | 2001 | 31-03-2002 | 31-03-2002 | 31-03-2002 |
| Jammu & Kashmir | 1342 | 159.00 | 127.38 | 42.64 | 2201 | 11 | 29 | 8.0 | 11414 | 4102 |
| Himachal Pradesh | 10802 | 2179.0 | 94.02 | 157.91 | 2505 | 53 | 58 | 12.7 | 14042 | 3235 |
| Uttaranchal | 5812 | 1155.0 | N.A. | N.A. | | N.A. | 31 | 9.8 | 13507 | 3141 |
| Sikkim | N.A. | N.A. | 92.18 | 31.25 | 2271 | 26 | 155 | 8.4 | 14420 | 2309 |
| Meghalaya | 466 | 65.0 | 61.17 | 49.02 | 2596 | 41 | 155 | 7.6 | 8400 | 1514 |
| Tripura | 971 | 405.0 | 28.95 | 11.51 | 1425 | 148 | 36 | 5.6 | 5802 | 1297 |
| Mizoram | N.A. | N.A. | 101.25 | 1.50 | 2327 | 23 | 104 | 8.5 | 5459 | 1412 |
| Manipur | 74 | 8.0 | 38.52 | 4.50 | 3278 | 51 | 76 | 3.1 | 2485 | 634 |
| Nagaland | 485 | 36.0 | 55.44 | 15.04 | 7651 | 123 | 21 | 3.3 | 5006 | 626 |
| Arunachal Pradesh | N.A. | N.A. | 56.61 | 6.08 | 1971 | 22 | 94 | 6.2 | 6768 | 1065 |
| India * | 9111 | 1417.0 | 75.15 | 107.00 | 4794 | 77 | 46 | 6.3 | 10468 | 6523 |

Data for Assam and West Bengal hills are not available.

Note: @, This Included self generation of non-Utilities; **, This Included roads under P.W.D., Z.P., Municipal Corporation, Municipal Councils, Irrigation Department and Forest Department; *, Included Union Territories.

[Source : Economic Survey of Maharashtra 2002-03, Directorate of Economics & Statistics, Planning Department, Government of Maharashtra]

Table 8: Workforce participation rate according to sex and by sector (2001) in the IHR.

| States/UTs | Rural | Urban | Combined |
|------------|-------|-------|----------|
|------------|-------|-------|----------|

| | Female | Male | Total | Female | Male | Total | Female | Male | Total |
|-------------------|--------|-------|-------|--------|-------|-------|--------|------|-------|
| Jammu & Kashmir | 25.84 | 49.14 | 37.93 | 9.5 | 51.8 | 32.71 | 21.96 | 49.8 | 36.6 |
| Himachal Pradesh | 46.47 | 54.74 | 50.63 | 14.96 | 54.38 | 36.89 | 43.69 | 54.7 | 49.3 |
| Uttaranchal | 33.32 | 45.99 | 39.63 | 7.28 | 47.58 | 29.09 | 27.09 | 46.4 | 36.9 |
| Sikkim | 40.67 | 57.75 | 49.75 | 21.42 | 56.27 | 40.49 | 38.59 | 57.6 | 48.7 |
| Meghalaya | 38.92 | 50.09 | 44.58 | 19.15 | 38.19 | 28.74 | 35.02 | 47.8 | 41.5 |
| Tripura | 22.86 | 50.61 | 37.11 | 12.09 | 51.78 | 32.32 | 21.02 | 50.8 | 36.3 |
| Mizoram | 54.73 | 59.52 | 57.22 | 40.5 | 55.32 | 48.09 | 47.63 | 57.5 | 52.7 |
| Manipur | 43.2 | 50.07 | 46.72 | 32.28 | 45.17 | 38.71 | 40.51 | 48.9 | 44.8 |
| Nagaland | 42.92 | 47.08 | 45.08 | 14.87 | 45.7 | 31.91 | 38.25 | 46.8 | 42.7 |
| Arunachal Pradesh | 41.33 | 51.13 | 46.47 | 16.69 | 48.99 | 34.16 | 36.45 | 50.7 | 44 |
| India | 30.98 | 52.36 | 41.97 | 11.55 | 50.85 | 32.23 | 25.68 | 51.9 | 39.3 |

Data for Assam and West Bengal hills are not available.

[Source: Women and Men in India 2001, Ministry of Statistics and Program Implementation, Government of India]

Table 9: List of eco-tourism and related projects sanctioned for expansion in the IHR (2000-2001 to 2001-2002). (Rs. in lakhs)

| States/Project | Year of Sanction | Amount Sanctioned |
|---|------------------|-------------------|
| Jammu & Kashmir Installation of Musical Fountain at Bagh-e-Bahu, Jammu & Kashmir | 2000-01 | 30.00 |
| Himachal Pradesh Purchase of Mountain Rescue Equipment, Himachal Pradesh | 2000-01 | 21.85 |
| Construction of Jetty at Govind Sagar Lake, Bilaspur | 2000-01 | 13.65 |
| Sikkim Rafting/Angling Hut at Mamring, Sikkim | 2000-01 | 8.00 |
| Purchase of Adventure Tourism, Rafting, Mountain-Bike and Trekking Equipment | 2000-01 | 35.00 |
| Purchase of Equipment for Promotion of Angling | 2000-01 | 27.00 |
| Construction of Trekking Route at Jandi Dara | 2000-01 | 5.00 |
| West Bengal Hills Procurement of Water Sports Equipment for Mirik Lake | 2000-01 | 8.00 |
| Water Sports Equipment for Mirik Lake | 2001-02 | 8.00 |
| Mizoram Procurement of Water Sports Equipment at Palak Lake, Mizoram | 2000-01 | 2.50 |
| Purchase of Water Sports Equipment for Rungble Lake | 2000-01 | 4.93 |
| Water Sports Equipment for Rungdir Lake | 2001-02 | 4.93 |
| Nagaland Procurement of Trekking Equipment of Kohima Distt. | 2001-02 | 29.94 |
| Arunachal Pradesh River Rafting Equipment at Siang, Arunachal Pradesh | 2001-02 | 7.10 |
| Angling Facilities at Bodak | 2001-02 | 3.23 |

Source : Lok Sabha Unstarred Question No. 4557 dated 22.04.2002.

Table 10: Per capita assistance sanctioned by all the financial institutions in the IHR (1996-97 to 2000-01). (Rs. in lakhs)

| States | 1996-97 | 1997-98 | 1998-99 | 1999-00 | 2000-01 |
|-----------------|---------|---------|---------|---------|---------|
| Jammu & Kashmir | 28.9 | 31.1 | 65.4 | 356.4 | 239.3 |

| | | | | | |
|-------------------|-------|-------|-------|--------|---------|
| Himachal Pradesh | 332.0 | 690.9 | 548.4 | 1259.1 | 895.7 |
| Uttaranchal* | - | - | - | - | 633.9 |
| Sikkim | 94.1 | 317.2 | 173.7 | 89.1 | 20434.1 |
| Meghalaya | 85.6 | 42.2 | 49.7 | 70.7 | 145.2 |
| Tripura | 34.8 | 36.8 | 24.9 | 31.3 | 31.4 |
| Mizoram | 51.1 | 41.0 | 43.6 | 77.9 | 89.6 |
| Manipur | 288.9 | 132.1 | 132.4 | 22.8 | 89.2 |
| Nagaland | 74.1 | 11.9 | 23.6 | 30.1 | 55.2 |
| Arunachal Pradesh | 135.3 | 115.6 | 237.9 | 28.4 | 55.2 |

Data for Assam and West Bengal hills are not available.

Note: *Sanctions and disbursements for this new state which came into being in October 2000, are included in parent state (Uttar Pradesh) for the year 1996-97, 1997-98, 1998-99 and 1999-2000.

[Source: Report on development banking in India 2000-01, Industrial Development Bank of India]

Table 11: Per capita government expenditure on health in the IHR (1999-2000).

| States | Per capita govt. expenditure* (in Rs.) |
|-------------------|--|
| Jammu & Kashmir | 374 |
| Himachal Pradesh | 418 |
| Sikkim | 575 |
| Meghalaya | 310 |
| Tripura | 186 |
| Mizoram | 674 |
| Manipur | 352 |
| Nagaland | 445 |
| Arunachal Pradesh | 613 |
| India | 162 |

Data for Assam and West Bengal hills are not available.

Note: *Expenditure on health did not include expenditure on family welfare, medical and health expenditure on defence services and local bodies.

[Source : Lok Sabha Unstarred Question No. 2642 dated 20.03.2002]

Table 12: Food grain production and yield per hectare in the IHR.

| States | Yield per ha. (in Kg.) (P) | | | | | Foodgrains production per capita (Kg.) | Consumption of fertilizers per ha. of cropped area (Kg.) | % of gross irrigated area to gross cropped area (P) | Net area sown per cultivator (ha) (P) | Average daily factory employment per lakh of population (No.) (P) |
|-------------------|----------------------------|--------------|-------------------|---------------|------------|--|--|---|---------------------------------------|---|
| | Total cereals | Total pulses | Total food grains | Cotton (Lint) | Sugar-cane | | | | | |
| | 1998-99 to 2000-01 | | | | | | | | | |
| Jammu & Kashmir | 1555 | 581 | 1488 | 113 | 21400 | 109.8 | 60.00 | 41.4 | N.A. | N.A. |
| Himachal Pradesh | 1760 | 414 | 1754 | N.A. | 27264 | 237.4 | 36.58 | 18.8 | 0.5 | (R) 1447 |
| Sikkim | 1344 | 867 | 1324 | N.A. | N.A. | 187.0 | 7.61 | 12.6 | 1.0 | N.A. |
| Meghalaya | 1473 | 763 | 1501 | 144 | 10667 | 86.8 | 15.39 | 20.8 | 0.5 | N.A. |
| Tripura | 2038 | 582 | 2020 | 209 | 47871 | 163.6 | 20.17 | 13.5 | 0.9 | 973 |
| Mizoram | 1777 | 1761 | 1820 | 494 | 5267 | 137.5 | 12.78 | 9.0 | 0.6 | N.A. |
| Manipur | 2290 | N.A. | 2686 | 227 | 67278 | 155.6 | 106.47 | 14.7 | 0.4 | N.A. |
| Nagaland | 1322 | 757 | 1208 | 227 | 52704 | 135.1 | 1.53 | 25.5 | 0.8 | N.A. |
| Arunachal Pradesh | 1101 | 978 | 1090 | N.A. | N.A. | 183.9 | 2.44 | 14.4 | 0.8 | N.A. |
| India * | 1808 | 601 | 1646 | 214 | 70972 | 188.8 | 87.56 | 39.2 | 1.3 | 1139 |

Data for Uttaranchal and hill regions of Assam and West Bengal are not available.

Note: *Included Union Territories; P, Provisional; R, Previous Year's Data.

[Source: Economic Survey of Maharashtra 2002-03, Directorate of Economics & Statistics, Planning Department, Government of Maharashtra]

Poverty line population

Poverty itself, despite decades of research on it, has no universally agreed upon definition. It can be defined as ability to attain minimum standard of living. People are considered poor when they can not secure a minimum standard of well-being and when they have limited or restricted choices and opportunity for a tolerable life (UNDP, 1997). Household incomes and expenditures per capita are adequate yardsticks for the standard of living.

The World Development Report 1992 defines poverty line as annual per capita income being lesser than US \$ 420. In Indian context, the poverty line in the VIII plan period was Rs. 11,000 per annum and during IX plan, the poverty line varied in different states and ranged from Rs. 13,000 to Rs. 19,650 per annum. It is probable that in the next plan period the poverty line would be about Rs. 22,000 to Rs. 24,000 per annum (Ministry of Rural Development, 1999). Despite voluminous development interventions, poverty is rampant in the states of IHR (Table 13).

Table 13: Statewise number (in lakh) and % of population below poverty line in the IHR.

| States | 1973-74 | | 1977-78 | | 1982-83 | | 1987-88 | | 1993-94 | | 1999-2000 | |
|-------------------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|-----------|-------|
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % |
| Jammu & Kashmir | 20.48 | 40.83 | 21.72 | 38.97 | 15.60 | 24.24 | 16.95 | 23.82 | 20.92 | 25.17 | 3.46 | 3.48 |
| Himachal Pradesh | 9.73 | 26.39 | 13.04 | 32.45 | 7.41 | 16.40 | 7.52 | 15.45 | 15.88 | 28.44 | 5.12 | 7.63 |
| Sikkim | 1.19 | 50.86 | 1.54 | 55.89 | 1.35 | 39.71 | 1.36 | 36.06 | 1.84 | 41.43 | 2.05 | 36.55 |
| Meghalaya | 5.52 | 50.20 | 6.79 | 55.19 | 5.62 | 38.81 | 5.48 | 33.92 | 7.38 | 37.92 | 8.23 | 33.87 |
| Tripura | 8.54 | 51.00 | 10.61 | 56.88 | 8.95 | 40.03 | 8.84 | 35.23 | 11.79 | 39.01 | 9.89 | 34.44 |
| Mizoram | 1.82 | 50.32 | 2.31 | 54.38 | 1.96 | 36.00 | 1.70 | 27.52 | 1.94 | 25.66 | 1.85 | 19.47 |
| Manipur | 5.86 | 49.96 | 7.06 | 53.72 | 5.65 | 37.02 | 5.29 | 31.35 | 6.80 | 33.78 | 7.19 | 28.54 |
| Nagaland | 2.90 | 50.81 | 3.74 | 56.04 | 3.50 | 39.25 | 3.66 | 34.43 | 5.05 | 37.92 | 5.49 | 32.67 |
| Arunachal Pradesh | 2.66 | 51.93 | 3.36 | 58.32 | 2.82 | 40.88 | 2.83 | 36.22 | 3.73 | 39.35 | 3.98 | 33.47 |

Data for Uttaranchal and hills regions of Assam and West Bengal are not available.

[Source: Economic Survey 2003-2004, Planning Department, Government of National Capital Territory of Delhi]

Poverty and NSDP

Poverty is cause and consequence or eventuality of various socio-economic factors (such as per capita income, household consumption, per capita food consumption, food ratio and calories, medical indicators of health and nutritional status and basic amenities, etc.). The process of poverty eradication in India is out of purview of resources allocation process practiced in the context of planning because there is no head of development on poverty eradication indicating plan-wise resource allocation (Gedam, 1996).

The net state domestic product (NSDP) has the inverse relationship with the poverty line population; the rise in per capita NSDP reduces poverty. In the IHR, per capita NSDP differs widely from one state to another as there are immense disparities in level of development thereby resulting wide variation in poverty from state to state. The following table shows the state wise NSDP in the IHR.

Table 14: Net State Domestic Product (NSDP) at current prices in the IHR (Rs. in crore).

| States | 1993-94 | 1994-95 | 1995-96 | 1996-97 | 1997-98 | 1998-99 | 1999-2000 | 2000-2001 | 2001-2002 | 2002-2003* |
|-------------------|---------|---------|---------|---------|---------|---------|-----------|-----------|-----------|------------|
| Jammu & Kashmir | 5500 | 6001 | 6973 | 7851 | 8858 | 11128 | 12182 | 12805 | 13697 | NA |
| Himachal Pradesh | 4250 | 5192 | 5930 | 6803 | 7807 | 9507 | 10882 | 12023 | 13320 | 14202 |
| Uttaranchal | 5005 | 6130 | 6644 | 7237 | 7878 | 8726 | 9338 | 10680 | 11361 | NA |
| Sikkim | 337 | 356 | 426 | 491 | 583 | 702 | 758 | 886 | 1039 | 1139 |
| Meghalaya | 1309 | 1432 | 1730 | 1899 | 2168 | 2581 | 2907 | 3343 | 3529 | 3842 |
| Tripura | 1619 | 1688 | 2073 | 2500 | 3015 | 3473 | 4193 | 4869 | 5660 | NA |
| Mizoram | 618 | 672 | 859 | 983 | 1022 | 1139 | 1288 | 1635 | 1777 | NA |
| Manipur | 1141 | 1221 | 1410 | 1654 | 1882 | 2125 | 2466 | 2517 | 2767 | 3047 |
| Nagaland | 1251 | 1457 | 1656 | 1849 | 2137 | 2184 | 2330 | 3427 | 3864 | NA |
| Arunachal Pradesh | 812 | 873 | 1071 | 1083 | 1192 | 1354 | 1457 | 1593 | 1628 | 1747 |

*Provision estimates; NA: Not available

Note: Estimates based on 1993-94 series.

As NSDP is calculated on state level, hence the same for hills of Assam and West Bengal is excluded.

[Source: Central Statistical Organization based on Directorate of Economics & Statistics of respective state government as on November 2004]

Table 15: Per capita NSDP at current prices in the IHR (in Rupees).

| States | 1993-94 | 1994-95 | 1995-96 | 1996-97 | 1997-98 | 1998-99 | 1999-2000 | 2000-2001 | 2001-2002 | 2002-2003* |
|-------------------|---------|---------|---------|---------|---------|---------|-----------|-----------|-----------|------------|
| Jammu & Kashmir | 6543 | 6915 | 7783 | 8667 | 9491 | 11591 | 12373 | 12781 | 13320 | NA |
| Himachal Pradesh | 7870 | 9451 | 10607 | 11960 | 13488 | 16144 | 18160 | 19784 | 21543 | 22576 |
| Uttaranchal | 6755 | 8119 | 8639 | 9239 | 9875 | 10742 | 11291 | 12687 | 13260 | NA |
| Sikkim | 7550 | 7696 | 8905 | 9901 | 11324 | 13158 | 14751 | 16658 | 18822 | 20456 |
| Meghalaya | 6894 | 7349 | 8644 | 9246 | 10281 | 11922 | 13062 | 14654 | 15070 | 15883 |
| Tripura | 5534 | 5656 | 6828 | 8109 | 9658 | 11012 | 13195 | 15253 | 17459 | NA |
| Mizoram | 8319 | 8793 | 10953 | 12210 | 12393 | 13479 | 14909 | 18491 | 19696 | NA |
| Manipur | 5811 | 6054 | 6812 | 7786 | 8625 | 9488 | 10723 | 10658 | 11410 | 12230 |
| Nagaland | 9129 | 10175 | 11057 | 11805 | 13052 | 12408 | 12594 | 17629 | 18911 | NA |
| Arunachal Pradesh | 8733 | 9148 | 10956 | 10816 | 11642 | 12955 | 13669 | 14683 | 14771 | 15616 |

*Provision estimates; NA: Not available

Note: Estimates based on 1993-94 series.

As NSDP is calculated on state level, hence the same for hills of Assam and West Bengal is excluded.

[Source: Central Statistical Organization based on Directorate of Economics & Statistics of respective state government as on November 2004]

Bank credit/deposit

Commercial banks in the country are saddled with the responsibilities of serving the needs of priority sectors like agricultural credit, rural infrastructure development, etc. The bank credit in the IHR has increased significantly in the last 35 years (Table 16). The states of Himachal Pradesh and Uttaranchal together account for about 64% of total credit in the region. Both the credit and deposit by all public sector banks in the north-eastern states are poor except Meghalaya, where the banking networks and bank deposits are noteworthy.

Table 16: Statewise distribution of bank offices, aggregate deposits and total credit of public sector banks[#] and percentage share of advances to priority sectors in the IHR.

| States | No. of offices | | Deposit (Rs. crore) | | Bank credit (Rs. crore) | | Share of priority sectors in total bank credit (%) | |
|-------------------|----------------|------------|---------------------|------------|-------------------------|------------|--|-------------|
| | June 1969 | June 2004* | June 1969 | June 2004* | June 1969 | June 2004* | June 1969 | March 2003* |
| Jammu & Kashmir | 35 | 260 | 18 | 5203 | 1 | 1190 | 30.3 | 45.2 |
| Himachal Pradesh | 42 | 648 | 12 | 9935 | 3 | 3297 | 2.7 | 55.7 |
| Uttaranchal | - | 654 | - | 17011 | - | 3290 | - | 57.4 |
| Sikkim | - | 48 | - | 1137 | - | 232 | - | 48.4 |
| Meghalaya | 7 | 128 | 9 | 2293 | 3 | 1062 | 5.0 | 20.2 |
| Tripura | 5 | 93 | 4 | 1711 | 0 | 392 | 9.5 | 56.8 |
| Mizoram | - | 26 | - | 497 | - | 211 | - | 56.5 |
| Manipur | 2 | 47 | 1 | 656 | 0 | 234 | Neg. | 55.0 |
| Nagaland | 2 | 16 | 1 | 1221 | 0 | 210 | 40 | 59.1 |
| Arunachal Pradesh | - | 49 | - | 985 | - | 139 | - | N.A. |

Source: Reserve Bank of India.

Data for hill regions of Assam and West Bengal are not available.

[#]Included State Bank of India along with its 7 subsidiaries and 19 nationalized banks,

*Provisional figures; Neg.: Negligible; N.A.: Not available

Notes:

1. Deposits excluded inter-bank deposits
2. Bank credit excluded dues from banks but included amount of bills rediscounted with RBI/IDBI/other financial institution
3. The data relating to deposits and bank credit relate to the last Friday of the month and are based on quarterly return on aggregate deposits and gross bank credit
4. Statewise percentages have been worked out with reference to gross bank credit (inclusive of food credit)

Workforce and dependency ratio

The working population of India according to 2001 Census report is 39.26% among the total population of the nation. In rural and urban areas the workforce participation are 41.97 and 32.23%, respectively. In the IHR the workforce participation is significantly higher (40.45%) as compared to the national average. However, there is wide variation among the states of the IHR. The share of working population among total population is quite high in north-eastern states except Tripura. This leads to a lower dependency ratio in these states, which is a sign of proper utilization of human resource. In contrast, the state of Jammu and Kashmir, Uttaranchal and West Bengal hills are having a lower percentage of workforce resulting a very high dependency ratio.

Table 17: Workforce and dependency ratio in the IHR.

| States/regions | Total workers (main+marginal) Census 2001 | % of workforce participation among total population | | Dependency ratio | |
|-------------------|---|--|-------|------------------|------|
| | | 2001 | 1991 | 2001 | 1991 |
| Jammu & Kashmir | 3,688,875 | 36.63 | N.A. | 1.73 | N.A. |
| Himachal Pradesh | 2,991,448 | 49.28 | 42.82 | 1.03 | 1.34 |
| Uttaranchal | 3,133,281 | 36.93 | 41.92 | 1.71 | 1.39 |
| Sikkim | 263,320 | 48.72 | 41.51 | 1.05 | 1.41 |
| W. Bengal hills | 566,672 | 35.29 | 34.22 | 1.83 | 1.92 |
| Meghalaya | 956,425 | 41.47 | 42.67 | 1.41 | 1.34 |
| Assam hills | 399,487 | 40.01 | 42.65 | 1.5 | 1.34 |
| Tripura | 1,158,190 | 36.29 | 31.14 | 1.76 | 2.21 |
| Mizoram | 469,597 | 52.7 | 48.91 | 0.9 | 1.04 |
| Manipur | 1,069,578 | 44.79 | 42.18 | 1.23 | 1.37 |
| Nagaland | 849,982 | 42.74 | 41.94 | 1.34 | 1.38 |
| Arunachal Pradesh | 482,206 | 43.97 | 46.24 | 1.27 | 1.16 |

Source : Census 2001

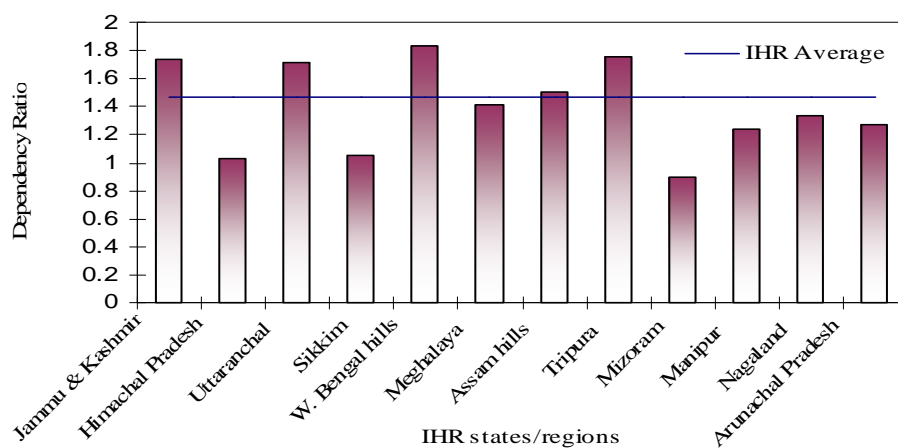


Figure 1: The dependency ratio in the IHR as on 2001.

CONCLUSION

The Indian Himalaya holds key to India's ecological and social security by virtue of being centre of biological and cultural diversity and store house for water and other resources. Apart from harbouring rich cultural and biological diversity, the Indian Himalayan region (IHR) is the major supplier of timber, medicines, fiber, oils, spices and condiments, firewood, organic manure, fodder and hydropower. It is reckoned as 'genebank' and continues to remain an important centre for the origin of the crop diversity and numerous under-utilized and potential future crops. The north eastern region of the IHR has been recognized as a world heritage of biodiversity hot spot.

The IHR is complex, unique in geomorphology, vulnerable, fragile and reacts sensitively to population pressure and global climate change. The intense variability of this mountain ecosystem and its elements to the human as well as climate induced changes is of great concern. It is invariable to note that the finite resources of the IHR are gradually depleting making it unable to maintain the demands of the changing life style of its growing inhabitants as well as other dependent populace down below in the plains. In the higher altitudes, the major Himalayan glaciers, which are the main source of water in northern and eastern India, are receding fast. Though the global climate change is one of the major causes of receding glaciers and there is no distinct finding linking intervention by local people directly with receding of glaciers, yet human interference in Himalayan lakes and other water bodies has resulted in the decrease in their area significantly over the time. One possible option to arrest resource depletion in the IHR is creation of sound database generated through research and development that would enable develop appropriate location-specific techniques and packages.

The real world data, both quantitative and qualitative, originating from the fact and figures of finite resource are dispersed across a geographical location of the IHR. Both human and natural resources in the IHR can be quantified from the facts that originate from the real world data. But this data unless processed or analyzed can not be used in a decision making process and may take the form of historical records that are recorded and filed without immediate intent to retrieve the same for decision making. Probably with the realization of this fact, two decades ago the National Committee on Environmental Planning and Coordination had organized a national seminar on 'Resources development and environment in the Himalayan region'. The issues raised at that time indicated the existence of information gaps. The recommendations included a list of priorities and among them two important ones were i) constitution of a high-level multidisciplinary group to identify gaps in the on-going research, design and development pertaining to the Himalayan region and also to identify appropriate financial arrangements for supporting further activities that need to be taken up, and ii) initiating a programme on long-term research into the functioning and dynamics of the Himalayan ecosystems. Some recommendations of this seminar were implemented and progress on certain sectors such as inventory of resources and development of suitable technologies was satisfactory. However, the pace of all such activities is not sufficient to meet the pace of population growth and their growing requirements, which are intimately linked with the natural resources of the region.

Keeping all these earlier developments as well as the present requirements in the view, this volume of resource information database has emphasized on real world data, which were collected and compiled to maximum number of available parameters. Analyses of

available data suggest that in the IHR the major concerns are degradation of bioresources with consequential negative repercussions on livelihoods, and infrastructure and economic development. Though the human resource developmental parameters (such as literacy, sex ratio, non-dependency rate, etc.) are significantly high in the IHR as compared to other parts of the nation, the economic development in the region is not up to the mark, and that too is unequally distributed. It is also appearing that the regions under central and western Himalaya have received comparatively better attention in developmental activities as compared to the eastern and north-eastern regions. The access to amenities (such as schools, medical infrastructure, post and telecommunication, bank and financial institutions, etc.) is better in the states in western and central Himalayan region than that of the north-eastern states.

The other finding that emerges from analyses of various data is that the ever-increasing human population is dependent on the finite resource and as a result per capita uses of all resources are decreasing gradually. This is very much true particularly in the case of land resources, where there is scarcity of arable land in the region. Agriculture is one of the most dependable and primary livelihood options of the communities living in the IHR and is getting affected adversely due to various factors through out the IHR. In the eastern Himalaya, agriculture practiced in the form of shifting cultivation (*Jhum*) is gradually becoming ecologically non-viable due to drastic reduction in its fallow period under intense anthropogenic pressure, while in the central and western Himalaya it is affected by size of settled agricultural land and significant growth in human population. It also appears from the analyses that by declaring more areas as protected area, the problem of livelihood dependency on forest resources of the local people is aggravated particularly in central Himalaya. The resource accounting done in this monograph based on sound database may help to resolve the problem of park-people conflict in declaring new biosphere reserves or protected areas in the region. Further, the findings also suggest that despite of the fact that the entire IHR region is treated as backward area in terms of poor economic and infrastructure development, there are wide variations in development within the region. Some portions of the region are well-developed, which can be compared with the developed states of the country while other portions continue to remain under-developed and backward and yet to entertain the minimum infrastructural requirement. As could be seen, this un-even distribution is not only characteristics of the states but also of the districts within the state.

Certain limitations of this volume have also been realized. For example, it is understood that the information module of this volume is the outcome of processed data using mathematical/statistical operation and human reasoning techniques. Therefore, the usefulness and validity of the data may lesser over time as information is always time variant and a dynamic model of resource use that involves change over time. Further, futuristic predictions based on historical time series data may result in inaccurate outcome as the nature is exposed to several environmental factors. However, using a time-series data a probable outcome could be predicted with a measure of variability to describe the significance of the outcome. The present volume based on secondary data could effectively be used for analytical purposes relating to regional planning and development. The major constraint while compiling this document was non-availability/accessibility of all the data on various parameters. Another constraint, as we felt, was the comparison of regions and states in the same scale in spite of

their geographical size. In order to avoid this problem in some tables, the data of Assam hills and West Bengal hills were excluded. However, despite the limitations and constraints, the volume would certainly serve as a reference point not only to general readership but also to the development planners particularly for the effective management of the resources in the Indian Himalayan region.

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G. B. Pant Institute of Himalayan Environment and Development was established during *Bharat Ratna* Pandit Govind Ballabh Pant Birth centenary year in August 1988 as an autonomous Institute of the Ministry of Environment and Forests, Government of India. The Institute is identified as a focal agency to advance scientific knowledge, to evolve integrated management strategies and demonstrate their efficacy for conservation of natural resources, and to ensure environmentally sound development in the entire Indian Himalayan region in harmony with the local perceptions.

Apart from undertaking research and technology development and/or demonstration on its own, the Institute has established linkages with various national and international organizations committed to environment and development issues in the mountains. The Institute's objectives also include identification and strengthening of the local knowledge of the environment and contribution towards strengthening research of regional relevance in the scientific Institutions/Universities/NGOs/Voluntary agencies working in the Indian Himalayan region.

The Institute functions under a Society, guided by the Government Body and a Science Advisory Committee and has a decentralized set-up, with its headquarters at Kosi-Katarmal, Almora, Uttaranchal and Units at Sikkim (Pangthang, East Sikkim), Himachal (Mohal, Kullu), Garhwal (Srinagar-Garhwal, Uttaranchal) and North-East (Itanagar, Arunachal Pradesh), and core scientists specialized in diverse disciplines, technicians, administrative and supporting staff, and a number of project fellows and research associates spread over various units.

All research and developmental activities of the Institute are multidisciplinary in nature and revolve around seven core programme *viz.*, Land and Water Resource Management (LWRM), Sustainable Development of Rural Ecosystems (SDRE), Conservation of Biological Diversity (CBD), Ecological Economics and Environmental Impact Analysis (EIA), Environmental Physiology and Biotechnology (EPB), Institutional Networking and Human Investment (INHI), and Indigenous Knowledge Systems (IKS). The thrust of research and development efforts is to provide solution to location-specific problems through time bound projects. The research is essentially need based and the field activities are well supported by laboratory based basic efforts whenever required. Rigorous data collection and demonstrations of science and technology inputs, including packages developed by the Institute, *e.g.* Sloping Watershed Environmental Engineering Technology (SWEET), are underlying activities of all the projects. The Institute is now moving from descriptions to prescriptions and demonstrations and also attempting to influence, through understanding of ground realities, the decision making process at all levels for the overall well being of the Indian Himalaya and its people. Apart from research and development activities, the Institute has a number of support facilities and services such as library, arboretum, videography, nursery, instrumentation centre, consultancy, project formulation, soil, water analysis, tissue culture, data processing and information systems, training programmes, workshop and seminars. The Institute receives its core fund from the Ministry of Environment and Forests, Govt. of India. In addition to the above, currently support from various national (DBT, CSIR, UGC, DST, INSA, NEC, ICSSR, MoWR, MoRD, ICAR, WWF-India, State Governments, etc.) and international (ICIMOD, UNESCO, NORAD, TSBF, Shastri Indo-Canadian Foundation, CIDA-SICI, BCN, McArthur Foundation, UNDP/FAO/UNIDO, UNICEF, etc.) agencies are also available. In addition to the execution of various in-house and externally funded R&D activities in the Indian Himalayan region, the Institute also sponsors projects, through Integrated Eco-development Research Programme (IERP), to various Universities/Institutes/Govt. Institutions and NGOs for the support of location-specific action-oriented R&D activities.

Besides research publications in the form of scientific papers, the Institute also publishes *Hima Paryavaran* Newsletter, ENVIS Bulletin, ENVIS Newsletter, Himalayan Biosphere Reserves Bulletin, Pt. Govind Ballabh Pant Memorial Lectures, Training Modules, Technical Reports and Annual Reports, etc. The research output and subject compilations are brought as Himavikas Publications or Himavikas Occasional Publications and are published by the reputed publishing houses. The Institute also provides consultancy services to various users/stakeholders within the mandate and jurisdiction of the Institute.



The Environmental Information System (ENVIS) Centre on Himalayan ecology was established at the headquarters of G.B. Pant Institute of Himalayan Environment and Development (GBPIHED) in the financial year 1992-93 with the fiscal support from the Ministry of Environment and Forests (MoEF), Government of India. ENVIS Centre on Himalayan ecology is a part of ENVIS network centres in India coordinated by the MoEF; the national focal point in the country for collating information from various ENVIS centres and providing national scenarios to the international programme INFOTERRA of the UNEP (United Nations Environment Programme). ENVIS Centres essentially help in handling of huge and varied information relevant to environmental management and development.

The ENVIS Centre of the Institute (GBPIHED) has the responsibility of collecting, collating, compiling and building qualitative and quantitative databases of information related to various aspects of Himalayan ecology. The centre is also integrating the available information in ready-to-use form for the users of the remote regions of the Indian Himalaya in particular and for regional development planning in broader perspectives. Through print/electronic media, the Centre is regularly disseminating all available information, free of cost, to various stakeholders/users that include all District Information Centres (operating in the Himalayan states of the country), ENVIS Centres elsewhere in the country, Universities and their Campuses, other educational and research institutions, policy makers and planners, Government and Non-Government organizations, and general public, etc., working on various aspects of Himalayan ecology. For further details, Dr. P.P. Dhyani, Scientist-in-charge of the ENVIS Centre of the Institute, may be contacted.