

CHAPTER II

SIKKIM: A BRIEF PROFILE

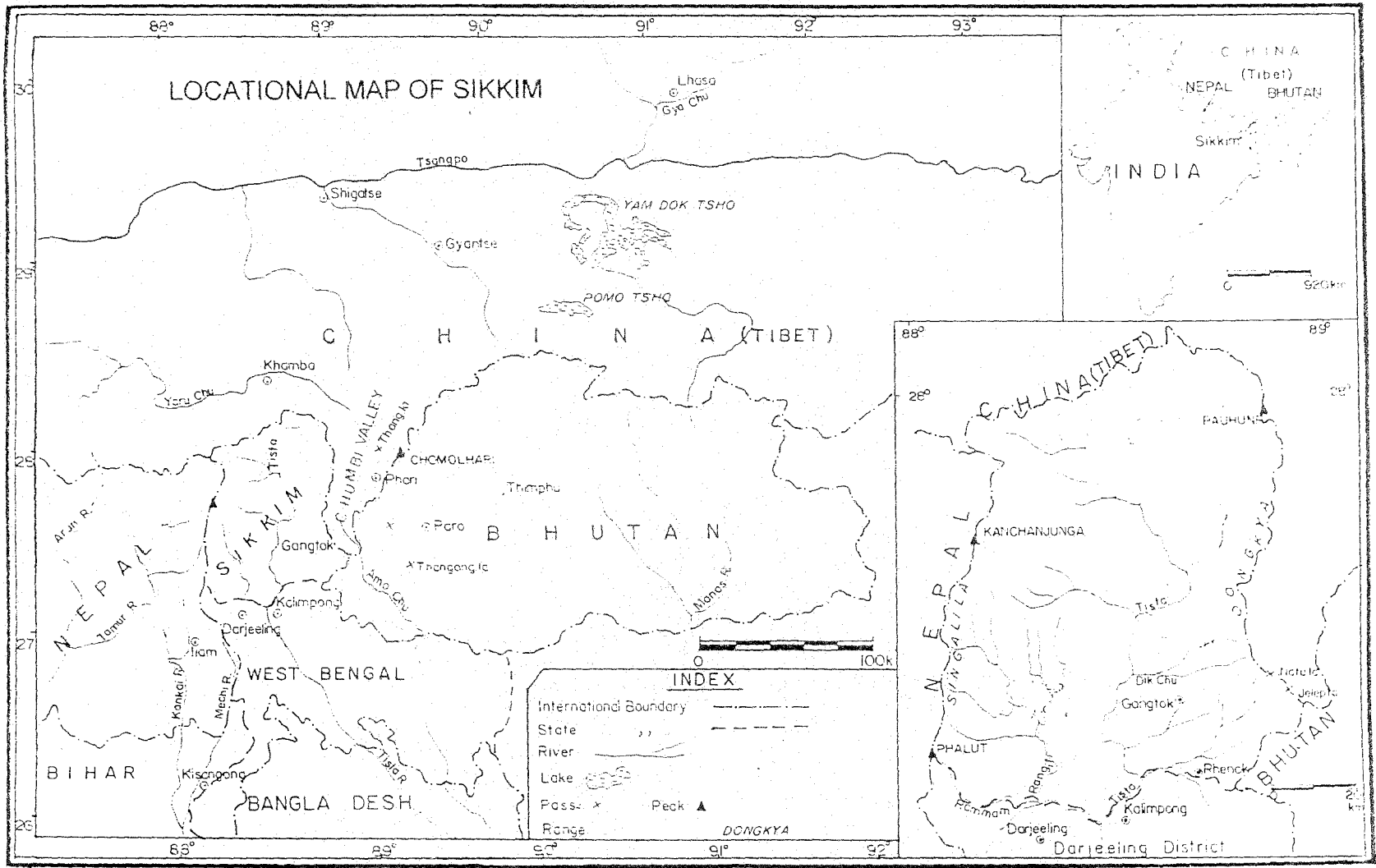
Sikkim: The Land and Its People

In our earlier chapter we have tried to build a theoretical framework for our understanding of regional disparity and variations. In this chapter we introduce the state of Sikkim focusing on its geography, political history, the nature of its economy, ethnic and demographic composition, Land use pattern, etc., before we look into the question of regional development, regional disparity and variations. All these we attempt in brief in this chapter.

Sikkim, the land of mystique splendour, is a small rectangular area in the Eastern Himalayas. It is located in the northern portion of India and is bounded by Bhutan in the east, China in the north, Nepal in the west and the state of West Bengal in the south. The three sides of the state is bounded with international boundaries, hence is strategically important and sensitive. It lies between 27° 00' 46" and 28° 07' 48" North latitude and 88° 00' 50" and 88° 65' 15" East, longitude. It stretches about 70 miles from north to south and 40 miles from

east to west. The total area of the state is approximately 7046 sq. km. The state has a rectangular shape and extends 114 km north-south and 64 km east-west. There are 441 revenue blocks and eight towns. The revenue blocks are aggregates of hamlets, sometimes five or six house forming such a hamlet.

Its population according to the census of 1991 is 4,06457 that is 0.05% of the total population of the Indian Union and ranks twenty-seventh position in population among the states and union territories. The census of 2001 has recorded a population of 540493 for Sikkim and the 2011 primary census abstract reported a population of 610,577. The word Sikkim in Nepali language means 'the new place'. It appears, when the Nepalese migrated to this area they started calling 'Sikkim', the new place in their language. In old official documents, its name appeared as '*Denzong*' meaning, 'the valley of rice'. But even before that some of its local inhabitants- the Lepchas used to call it 'Neliang', meaning, the 'country of caverns', while to some of them it was 'Nyemael' or paradise.



Map: 1

The pass of Nathula (15,512') and Jalepla (13,254') stands on the eastern side of Sikkim. They are strategically important for Sikkim as well as India, during the Sino-Indian war in 1962; the Chinese had attempted to enter into Sikkim through this route. Teesta is the most important river of the state, which divides it into two-part form north to south. Lachen, Lachung, Rangit and Rangpo are the tributaries of river Teesta.

A Brief Political History

Unlike the history of India the early history of Sikkim is till now not properly known. This is largely because very little historical evidence in different forms is available to us. Thus in the absence of any authentic records, what is generally done is numerous folklores and tales of the Lepchas generally are pieced together to understand their history. It is from these sources it could be inferred that before the immigration of Tibetans into Sikkim, the Lepchas inhabited the land. It is believed that they had migrated from the Myanmar borders. The Tibetans began to arrive in the Chumbi valley during the 10th and 11th century and proceeded further to Sikkim. The Lepcha's were too submissive and docile to offer any resistance to the new invaders. The 'Blood Treaty' in 1641 between the Lepcha and the Bhutia tribes

promoted the growth of a multi- ethnic society in Sikkim. The Bhutia invaders who entered into Sikkim, very soon established themselves as the ruling dynasty of the land. If we go by the legends, three powerful monks from Tibet selected '*Phuntsog*' from among the Bhutia settlers as their first '*Chogyi*' or '*Dharmaguru*'. One of the monks offered his title to the '*Chogyi*', that is how the '*Namgyi Dynasty*' was formed. The Bhutia settlers in Sikkim were the followers of the Nying-ma sect, an old sect prevailing in Tibet prior to the Grand Hierarchy system of Dalai Lama institution of Gelug-pa sect. The Lepcha's were converted to Lamaist Buddhism of the Tibetans. In course of time the original inhabitants, the Lepcha's did not see any improvement in their economic status and remained poor except those who married Bhutia's, whereas the Bhutia's arrived later in the land and very soon emerged as the elite sections of the society. These are some earliest written material available to us from the records of the earlier writers. An important record available to us is J.D. Herbert's "Particulars of Visit to the Sikkim Hills". He was an official of the British East India Company, and had given a valuable travel account of Sikkim in 1830. Among the nineteenth century writers, the well known ones, who had written on the various aspects of, the Country's

socio economic condition, are Dr. Archibald Campbell, Sir Joseph Dalton Hooker, Dr. Robert Gordon Lotham, George Byre Mainwaring Lawrence Austin Waddell, Herbert Hope Railey etc., and among the twentieth century authors the names of John Claude White, Stocks Beavoir, L. Shermann and George A. Grierron are famous.

In the first half of the eighteenth century Sikkim was engulfed in a series of attacks from aggressive Nepal and Bhutan. Nepal's aggression of Sikkim came to an end in 1817 (with the signing of the Treaty of Titaliya), when the rulers of Sikkim helplessly sought assistance form the British East India Company. The British East India Company by then had established a stronghold in the whole of Eastern India. The presence of the British East India Company in Sikkim stopped the aggression by Nepal, but the migration of Nepali population continued.

MAP OF SIKKIM



Source: Department of Tourism, Government of Sikkim

The signing of the treaty in 1817 also ended the Tibetan influence in Sikkim. The British interest in Sikkim was chiefly in trade with Tibet. It also had political interest in Sikkim. Sikkim signed a treaty with the British East India Company surrendering all her rights to deal with any foreign power and conceded unhindered rights of free access to the British till Tibet border and in 1861 Sikkim became a protectorate.

One significant change started evolving in Sikkim gradually with the advent of the British. The ethnic scenario of Sikkim began to change rapidly which was going to change the Ethnic-political scenario of Sikkim in the near future. Not only did the early Nepalese settlers multiplied in number, the British needed more Nepali labourers to develop the communication network for access to Tibet hence it indirectly encouraged Nepalese to settle in Sikkim. By 1891, the Nepalese constituted fifty-one (51.0) percent of the population of Sikkim, reducing the Lepcha's to Nineteen (19.0) percent and Bhutia's to sixteen (16.0) percent. The figures exclude the population of Darjeeling which had been gifted by the Sikkim rulers to the British as a health and recreation-resort forming part of the state of Bengal under British East India Company.

India after independence, entered into a standstill agreement with Sikkim in 1948, maintaining the status quo and retaining all earlier rights and obligations. During this period, Sikkim's political scenario changed fast with the birth of a number of political parties. Prominent among them were 'Sikkim State Congress' and 'Sikkim National Party'. The former championed the cause of democratisation of political process, abolition of land- lordism and accession of Sikkim with India, while the latter opposed all that the former stood for. 'Chogyal', the Maharaja of Sikkim, backed the 'National Party of Sikkim'. The demand for agrarian and political reforms by the Sikkim State Congress led to mass demonstrations as a result of which the government of India took over the administration of Sikkim. A referendum was held in the state to decide the question of Sikkim's merger with India and on the basis of the referendum on May 16, 1975, Sikkim merged with India becoming the 22nd state of the Indian union.

Incidents relating to merger have been fairly well written exhaustively by different writers like, 'The story of integration with India' (1978) by P. R. Rao, 'Smash and Grab' (1983), by B. S. Das, 'Annexation of Sikkim' (1984), by S. K. Datta, 'State Government and Politics' (1985) by N. Sengupta, 'Sikkim: A

Himalayan Tragedy' (1987), by Nari Rustamji. There seems to be controversy related to Sikkim's unification with India, some have advocated the unification as annexation where as others call it as a merger. All these books have discussed in details the problems of Sikkim before and after merger from different standpoints. We there need not to go into details regarding these points. We can however simply assume that there is no unanimous agreement among scholars regarding the way it had became the 22nd state of India. In our later discourse we would prefer to use the term merger, since it is widely used in literatures and other periodicals.

An interesting question of "*Sikkimese subject*" has evolved during the *Chogyal's* period and after its merger to India. The Bhutias use to call themselves as *Sikkimese*, along with the Lepcha's, meaning the original inhabitants of the land. This phrase was generally used to distinguish themselves from the Nepalese who migrated to the land during the beginning of the nineteenth century. The purpose of such classification was purely to protect economic and political interest of the elite class who wanted to keep hold of the resources particularly arable land and forest. The Nepali migrants were not given the "*Sikkim subject*" till 1961, though they permanently resided in Sikkim.

Immediately after Sikkim's merger with India, those who held tilling cum proprietary rights naturally obtained ownership rights and became the citizens of India. Hence, the term *Sikkimese* prior to its merger meant the Bhutia-Lepcha but now it also includes the Nepalese. Though still now particularly Bhutia's refer them as *Sikkimese*, in pride of their historical identity once they enjoyed earlier. The question of land and ethnicity is fairly dealt by Nakane Chie (1966), Rose(1978), Sengupta (1985), Sinha (1975), Dutta (1992) and others.

Land Use

The land use pattern of a country or state depends upon the relief and climatic feature. Sikkim is a mountainous state situated in the middle Himalayas. It has a rugged topography and very less portion of the state is available for human habitation and agriculture. The climatic condition too varies a lot while one travels from north to south. The southern portion of the state is thickly populated as compared to the northern part, which remains under snow for a longer part of the year.

As far as the land utilization is concerned, Sikkim has been divided into six major land utilization zones. It has been noticed that the cropping pattern depends upon altitude. At

lower altitudes i.e., up to the height of 2000 m, maize, rice, pulses are cultivated. At higher elevation i.e., up to a height of 3000 m wheat, barley and potato are grown and handy crops like buckwheat and barley are also grown. The increase in height results in temperature decrease. These results not only in the change of cropping pattern but it also decrease cultivated lands. It is also noticed that at higher altitudes people depends on the local crops and due to inaccessible areas and lack of transportation and communication, they have restricted contacts with the outer world. Under these circumstances and the land use pattern, the health, hygiene and economic status of the people get affected.

In Sikkim, only 63,254 hectares of land is under net sown area. There has been a decrease in net sown area compared to 1980-81 that was 78,321 hectares. Similarly the area under current fallow has gone down in 1980-81 from 4,428 to 3,906 hectares in 1990-91. In Sikkim only 1, 11,302 hectares of land is under agricultural operation as per 1991 figures. This is about 15% of the total area, which is cultivated. This majority of the land area is covered up by forest, barren and uncultivated land, and pastures and grazing land. Cultivated land is generally situated between 300 m to 3000 m, but agriculture is

mainly practiced below 1800 m. Farmers generally stay near to their agricultural land and practice terrace cultivation. Since the land is uneven, they are made flat to do agriculture.

Table:-2.1, Area under different Land use in Sikkim as per Agricultural Census

Sl. No.	Classification	1976-77	1980-81	1990-91
(Land under Operational Holding)				
1.	Net sown Area	64,927 (9.15)	78,321 (11.04)	63,254 (8.91)
2.	Area under current fallow	501 (0.07)	4,428 (0.62)	3,906 (0.55)
3.	Other cultivated area excluding fallow land	4,925 (0.69)	4,560 (0.64)	10,830 (1.53)
4.	Fallow other than current fallow	944 (0.13)	9,474 (1.34)	9,204 (1.30)
5.	Cultivable Waste Land	1,153 (0.16)	681 (0.10)	9,807 (1.38)
6.	Land not available for cultivation	6,613 (0.93)	11,604 (1.64)	14,300 (2.02)
TOTAL OPERATED LAND		79,062	1,09,068	1,11,302
% OF TOTAL GEOGRAPHICAL AREA		(11.14)	(15.37)	(15.69)

Source: Sikkim-District wise General Information, Bureau of Economic and Statistics, Government of Sikkim. 1992-1993.

Table:- 2.2, Land Use Pattern of Sikkim, 2001-2002

Sl. No.	Particulars	North	South	East	West	State Total
1.	Irrigated land	1386.8451	2166.9974	5448.4100	2307.3387	11309.5912
2.	Un-irrigated land	3725.9490	16350.3755	11577.9070	17654.3892	49308.6207
3.	Non Agricultural Use	1897.5797	1614.2697	1864.4778	847.9344	6224.2616
4.	Forest/Jungle/Bushes	955.8465	1457.4781	9861.2811	2128.8972	14403.5029
5.	Grass land	71.8582	1283.5421	1456.4621	1306.4535	4118.3159
6.	Barren Land	1033.1399	2386.1211	2539.7831	3021.575	8980.974
7.	Uncultivated Fallow land	1030.1399	641.5889	1002.2483	5869.2609	8543.238
8.	Cardamom Field	8973.0000	4400.0000	6555.0000	4233.2587	24161.3587
	Total	19074.7132	30300.3728	40305.5694	37369.1076	127049.863

Source: Sikkim: A Statistical Profile 2004-2005, Directorate of Economics, Statistics, Monitoring & Evaluation, Government of Sikkim, Gangtok,

Forest

Sikkim has the distinction of being the greenest state of India with a forest cover of 47.3% of its total geographical area¹. Sikkim's forest cover of 47.3% is double the national average of 21%. The forest cover in the state, based on the satellite data, is 3,359 sq km of the total geographical area 7,096 sq km. In terms of density of forest canopy, the state has 500 sq km area under very dense forests, 2,169 sq km area under moderately

¹ 'Sikkim the Greenest State', as published in the "Sikkim Express", Monday, 19th August, 2013, Gangtok.

dense and 698 sq km under open forest. The forest area in the state under very dense forest, moderately dense forest and open forest is 7.05 percent, 30.45 percent and 9.84 percent respectively in respect to national average of 2.54 percent, 9.76 percent and 8.73 percent respectively. The forest cover of this tiny Himalayan state, which was 43.97 percent in the year 1993, has now increased to 47.34 percent. The state government has fixed a target of bringing an additional 1000 hectares of land under forest cover during the 12th five year Plan Period (2012-2017). The rise in the forest cover was mainly due to the various protection and conservation measures like Sikkim Green Mission, Ten Minutes to Earth and Smriti Vans launched by the Chief Minister Pawan Chamling. The State Government has spent almost Rs. 10 crores on the Green Mission, under which around 45 lakhs indigenous trees, shrubs, herbs, climbers, creepers, coniferous and green foliages, including fruits and medicinal plants, have been planted. The state is a home to the snow leopards, the red panda, Himalayan black bear, musk Deer and flying squirrel, among endangered species. The state has brought 38 percent of the geographical area under protected area cover network of National Parks, Sanctuaries and Bio-reserves. The state government has brought 38 percent of

the geographical area under protected area cover network of national parks, sanctuaries and biosphere reserves created for the conservation of biodiversity.

As per the state of forest report of the Forest Survey of India, Ministry of Environment & Forest, Government of India, the forest cover assessment status in different reported year is as under:

Table:- 2.3, SIKKIM, FOREST COVER

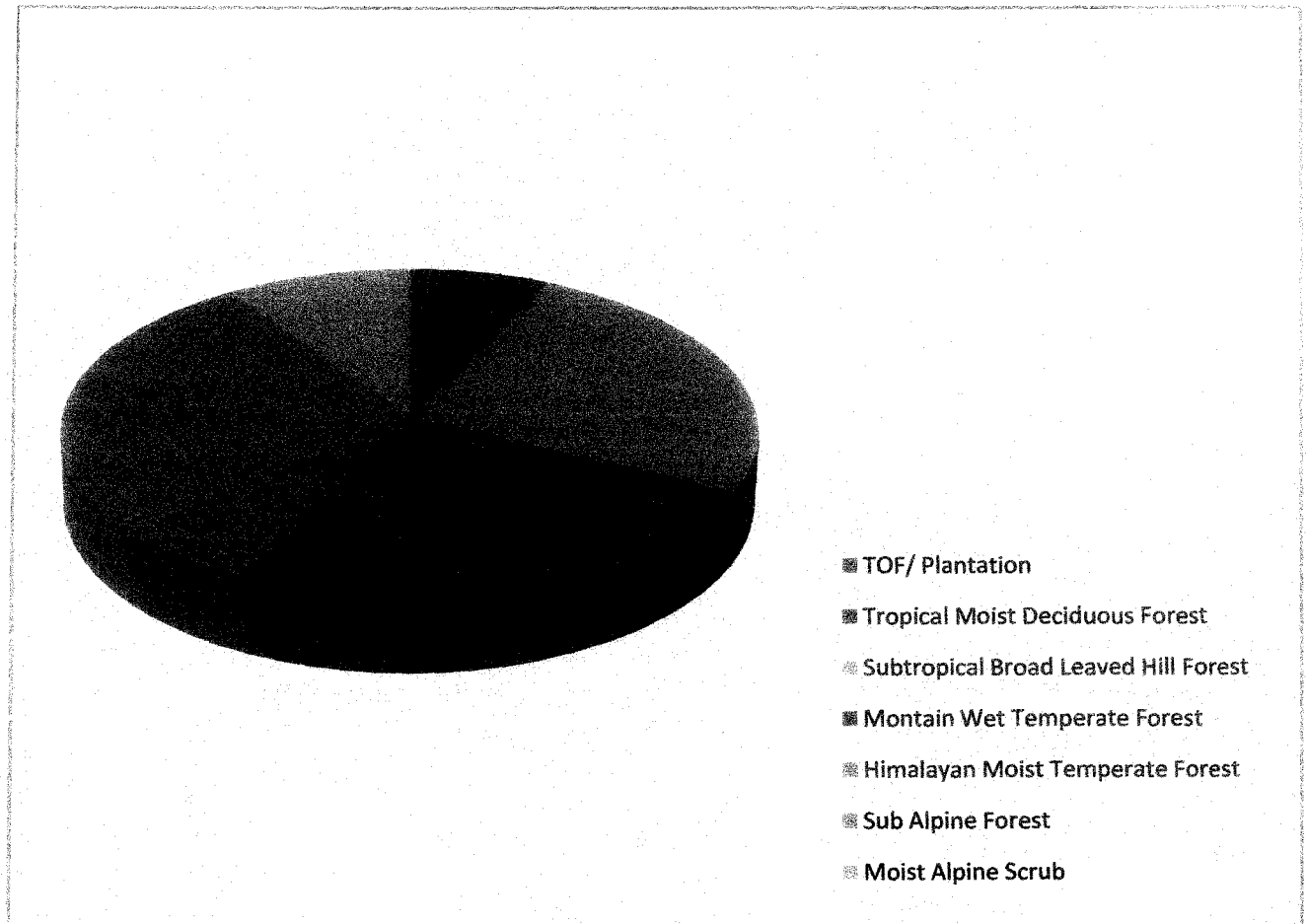
Year	1987	1989	1991	1993	1995	1997	1999	2001	2011
Forest cover Assessment	2,756	3,041	3,041	3,119	3,127	3,129	3,118	3,193	3,359*
% of Geographical Area	38.84	42.86	42.86	43.95	44.06	44.10	44.00	45.00	47.3*

Source:<http://sikkim.nic.in>

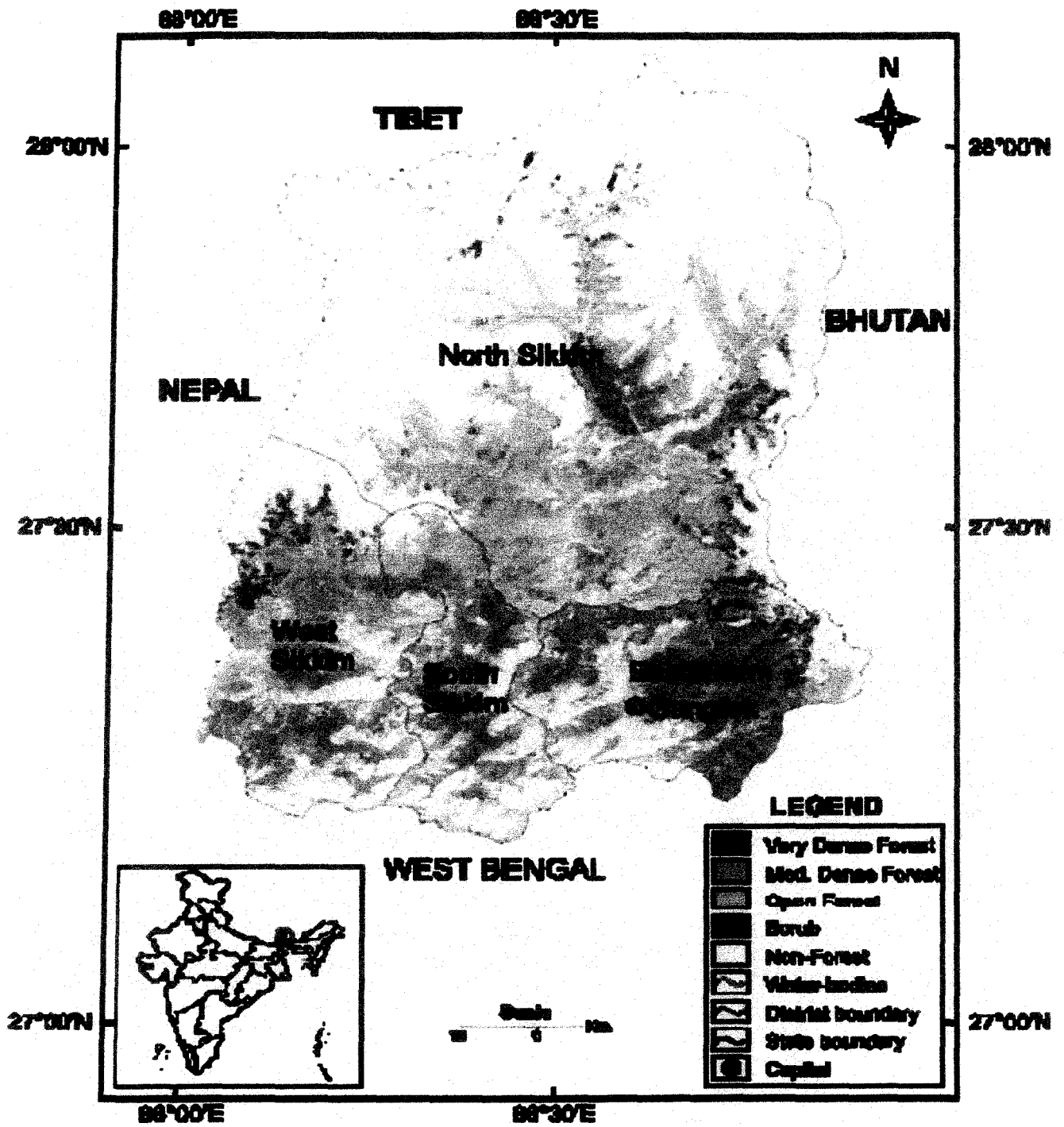
*As published in the "Sikkim Express", Monday, 19th August, 2013, Gangtok

PIE DIAGRAM

SHOWING FOREST TYPES OF SIKKIM 2005



Source: Forest Resources of Sikkim, chapter V, State of Environment 2007, Department of Forests, Government of Sikkim.



Source: State of Environment 2007, Department of Forests, Government of Sikkim.

Flora and Fauna of Sikkim

The flora of Sikkim Himalaya has partly been studied by the famous Taxonomist Shri J. D. Hooker as early as 1848 as a part of Flora of British India published in 1842 -1857. Since then, the Botanical Survey of India has been exploring the approachable pockets in parts of Sikkim from Botanical point of view (Rolla S. Rao, 1968). However, no comprehensive vegetation type map of the entire Sikkim could be generated due to inaccessibility probably a great constraint for ground survey.

Sikkim, in addition with its dense forest, mountains and lakes, has acquired its maximum splendor owing to its variety of flora and fauna. The main reason could be the weather that remains favorable for the vegetation and Due to the abrupt altitudinal shift. Sikkim possesses an extensive range of plants and foliage, providing a great place to explore for a naturalist.

Flora

Sikkim has approximately 5,000 blossoming plants, 515 extraordinary orchids, 60 primula species, 36 rhododendron species, 11 oak varieties, 23 bamboo varieties, 16 conifer species, 362 types of ferns & ferns' allies, 8 tree ferns and more than 424 medicinal plants. The Rhododendron is acclaimed to be the state tree. Sikkim boasts of a wide range of the species

that grows in sub-tropical to alpine regions. In the lower altitudes, orchids, figs, laurel, bananas, sal trees and bamboo are traceable enjoying the subtropical climate. Above 1,500 meters (in temperate regions), oaks, chestnuts, maples, birches, alders and magnolias are found in large numbers. Under alpine-affected regions, juniper, pine, firs, cypresses and rhododendrons are quite common that happen to come across between the altitudes of 3,500 to 5 000 m. The official flower of Sikkim is Orchid *Dendrobium Nobile* that is found at higher altitudes.

Fauna

The woods provide a favorable abode to the wide-ranging fauna of Sikkim. The animal kingdom comprises Snow Leopard, Musk Deer, Bhoral, Himalayan Tahr, Red Panda, Himalayan Marmot, Serow, Goral, Barking Deer, Langur, Himalayan Black Bear, Clouded Leopard, Marbled Cat, Leopard Cat, Wild Dog, Tibetan Wolf, Hog Badger, Binturong, Jungle Cat and Civet Cat. In the alpine zone, one can easily find yaks that are generally nurtured for their milk, meat and as a beast to carry burden. The state has a treasure of a large variety of arthropods too. Sikkim boasts of not less than 550 species of birds and out of

them, some are recognized to be rare and endangered. Impeyan Pheasant, Crimson Horned Pheasant, Snow Partridge, Snow Cock, Lammergeyer, Griffon Vultures, Golden Eagles, Quail, Plovers, Woodcock, Sandpipers, Pigeons, Old World Flycatchers, Babblers and Robins formulate the avifauna of Sikkim. Yet another group of fauna is that of butterflies. In Sikkim, 695 species of butterflies have been recorded, while Indian subcontinent has 1438 species on the whole. Kaiser-i-hind, Yellow Gorgon and Bhutan Glory are some of the endangered species of butterflies that are found in Sikkim².

In the present context, six broad vegetation types have been demarcated in Sikkim based on Champion and Seth (1986)³. They are:

1. Tropical Semi-evergreen Forests
2. Sub-tropical Broad-leaved Hill Forests
3. Himalayan Wet Temperate Forests
4. Sub-alpine Forests
5. Moist Alpine Forests
6. Dry Alpine Forests

1. Tropical Semi-evergreen forest (300m-900m)

²<http://www.Indiafiles/Sikkim.florafauna>

³ Forest Resources of Sikkim, chapter V, State of Environment 2007, Department of Forests, Government of Sikkim.

The Tropical semi-evergreen Forests with Sal as a dominant species along with a few deciduous components, is the climax type of vegetation in the foot hills of the district. These forests have been influenced by physiographic, edaphic and biotic factors of the region.

2. Sub-tropical mixed broad-leaved hill forests (900m-1800m)

As altitude increases from 900-1800m, the forests also gradually change from Tropical to Sub-tropical forests comprising tree species of *Macaranga*, *Schima*, *Eugenia*, *Sapium*, *Castanopsis* and these are generally mixed with shrubby species of *Baliospermum*, *Clerodendrum* and *Embllica*. Generally it is not possible to identify these two vegetation types as separate classes in satellite imagery since the signatures of these mixed composition of species are not distinct, hence classified as Mixed broad leaved hill/Mixed forests.

3. Himalayan wet temperate forests (1800m-2700m)

The vegetation gradually changes from sub tropical to sub-temperate in the altitudinal range of 1800-2400m and beyond that the vegetation becomes that of distinct Temperate forest. In the region between 1800 m to 2400 m, the dominant

species are *Suaga* (Hemlock), *Acer*, *Michelia*, *Juglans*, *Rhododendron*, *Ilex* associated with *Rosa*, *Rubus*, *Berberis* and *Viburnum*. The typical temperate forests *Quercus* (Oak), *Acer*, *Populus*, *Larix* and *Abies densa* predominate the region between 2400 m and 2700m. The Himalayan wet temperate forests comprise of coniferous species with needle shaped leaves easily differentiable from broad leaved species due to their distinct spectral signatures.

4. Sub-alpine forests (2700m3700m)

The vegetation from typical temperate type gradually changes to sub-alpine type at higher elevations. The tree species of *Rhododendron* are found predominantly mixed with a variety of species like *Gaultheria*, *Euonymus*, *Viburnum*, *Juniperous* and *Rubus*. Under this zone, the extensive *Rhododendron* patches were delineated but further stratification into different density classes could not be done due to their uniform canopy cover.

5. Moist Alpine forests (3700m4000m)

The vegetation in this zone mainly comprises of typical alpine meadows where tree growth is completely arrested. Quite a few stunted bushy growth species of *Rhododendron* mixed with tough clumps of *Juniperous*, *Salix*, *Berberis*, *Rosa* and *Lonicera* are common.

6. Dry Alpine forests (above 4000 m)

The vegetation is practically of scattered scrubs, often barren. Most of the species are of stunted thorny scrubs nature. Some of the common species are *Berberis*, *Juniperous* and *Salix*. In the present investigation, the alpine zone has been delineated into three categories as alpine barren with no vegetative cover, alpine scrub with scattered bushy vegetation and alpine meadows/pastures with predominantly of grasses.

Power

Power is a vital input for developmental works. There is an increasing demand for power supply in the state since its merger with India in 1975. The use of electricity was restricted to the state capital of Gangtok. The then ruler introduced use of electricity in the state in 1927 with an installed capacity of 50 KW as per the records. The total electricity consumers in the state till the end of March 1975 were just 1800 in numbers. Power supply was continued to the state capital and the district head quarters. Next the construction and commissioning of 21 MW Jali Power House in the year 1964 by the Government of India as a diplomatic gesture to the then Kingdom of Sikkim formed an important phase in the growth of power development in Sikkim.

There has been a gradual increase in generation capacity as far as the power development is concerned during the successive plan periods as shown below:

Table:-2.4, GENERATION CAPACITY DURING THE SUCCESSIVE PLAN PERIODS

<u>Upto the end of</u> <u>1975</u>	3,00 MW
5 th Five Year Plan	3,80 MW
6 th Five Year Plan	11.20 MW
7 th Five Year Plan	13.60 MW
8 th Five Year Plan	14.20 MW
TOTAL	35.80 MW

Source: Power Department, Government of Sikkim.

After Sikkim's merger with India, there has been an increase in the allocation of fund in the power department. The basic task was to create infrastructure in every part of the state for supply of power and management of the organizational set up. The power department has seen a progressive increase of expenditure during the last Four Five Year Plan for various activities like Generation, Transmission and

Distribution and Rural Electrification. The expenditure under various plan periods is shown below.

Table:-2.5, EXPENDTURE ON POWER DURING VARIOUS PLAN PERIODS

Plan Periods	Actual Expenditure
Fifth Plan	925.25 Lakhs
Sixth Plan	1698.81 Lakhs
Seventh Plan	4449.76 Lakhs
1990-92	3488.20 Lakhs
Eighth Plan	14339.63 Lakhs
Total	24901.65 Lakhs

Source: Power Department, Government of Sikkim.

As there is fluctuation of river water discharge during the summer monsoon and winter monsoon, the generation capacity reduces to almost 50% during the winter monsoon due to lean discharge. The Load profile of the state is just the reverse of the generation pattern. During the lean winter months, water discharge of the rivers and streams recede appreciably thereby reducing the generation capacity by more than half. While the power demand in the chilly winter months increases by more than double. Compared to earlier years, water discharge in the rivers and streams is going down

alarminglly posing threat to the generation capabilities of the existing power station every year. The state may face shortfall of capacity all the time in future unless and until additional measure is taken. The Ninth Plan period has seen a proposal of small, mini and micro hydel power projects to take up this challenge. The mini hydel power projects are scattered all over the state.

Table:- 2.6, CAPACITY OF MINI HYDEL POWER PROJECTS

Rolep HEP - II	9 MW
Bagchachy HEP	6 MW
Lachungchu	3 MW
Lachungchu - II	0.45 MW
Rangpuchu	1 MW
Lower Kolez	3 MW

Source: Sikkim's Onward March since December 1994, Information and Public Relation Department, Government of Sikkim.

In addition to the construction of newer Hydro Electric Powers, the government has also paid attention to renovate the existing hydel projects. The damage to the existing hydel projects are due to erosion, wear and tear, deformation due to variation in operating pressure and frequent damages on account of land slides, sinking of lands at places

and falling boulders. The department has underwent major renovation of four hydel power project whose achievement made are as under.

Table:-2.7, ACHIEVEMENT OF POWER PROJECTS AFTER RENNOVATION

Power Stations	Earlier Capacity	Capacity	Target Retrieved
1. Lower Lagyap	5.00 MW	10.00 MW	12.00 MW
2. Jali Power House	1.00 MW	1.50 MW	2.50 MW
3. Rimbi Stage - I	0.15 MW	0.40 MW	0.60 MW
4. Rothak Microhydel	0.00 MW	0.10 MW	0.20 MW
Total	6.15 MW	12.00 MW	15.20 MW

Source: Power Department, Government of Sikkim, 1991.

The peak load demand as estimated by the power department of the state at the end of Ninth Plan will be of the order of 46 MW even without considering industrial units. The question of importing the states requirement of power from the inter-state grid existing between Melli and Kalimpong does not arise due to absence of regional grid. The following are the present state of power generation in Sikkim.

2.8 Details of Energy Generation in 1996-97

Sl. No.	Name of the Project	Installed Capacity (MW)	Gross Generation (KW)	Auxiliaries (MKWH)	Net Energy (MKWH)
1.	L.L.H.P	12.00	32.01	1.30	30.71
2.	J.P.H	2.50	3.29	0.18	3.13
3.	Rimbi - I	0.60	0.26	0.02	0.24
4.	Rongnichu - II	2.50	3.21	0.15	3.06
5.	Chaten (Lachen)	0.10	0.13	0.01	0.12
6.	Rimbi - II	1.00	2.44	0.10	2.34
7.	Lachung	0.20	0.35	0.01	0.34
8.	Mayangchu	4.00	10.51	0.28	10.23
9.	U.R.H.P	8.00	18.07	1.06	17.01
10.	Kalez	2.00	1.28	0.06	1.22
11.	Diesel	2.70	0.95	0.05	0.90
Total		35.60	72.50	3.20	69.30

Source: District General Information, 1991, Government of Sikkim

Apart from the projects above, there are also projects, which are under construction and some, which are proposed during 1997-98. Ramam Project and Rangit Project may also contribute significantly after its completion. The state government has also shown keen interest in implementing Teesta Stage III (1200 MW) and Teesta Stage V (510

MW) under private or joint sector. The projects under construction and proposed are as follows:

2.9 Projects under Construction/Proposed during 97-98

Projects	Installed Capacity	Firm Capacity
1. Rathangchu HEP	30.00 MW	15.00 MW
2. Rabamchu HEP	3.00 MW	1.50 MW
3. Peurey Micro Hydel	0.20 MW	0.10 MW
4. Rolep HEP	6.00 MW	6.00 MW
5. Lachung HEP	3.00 MW	1.75 MW
6. Rangpochu HEP	1.00 MW	0.50 MW
Total Capacity (by the end of 9th Plan)	43.20 MW	24.85 MW

Source: Power Department, Government of Sikkim.

As far as Rural Electrification is concerned, high priority has been given to extend electrification to the scattered settlement pattern in Sikkim. Initially, the construction and maintenance of electric lines has been difficult due to unfriendly nature of the terrain and the dispersed nature of settlement. There are 405 Revenue Blocks in the state and has accomplished 100% electrification during the year 1990-91 with the help of loan assistance from Rural Electrification Corporation of India Limited, A Government of India undertaking. During the 5th Plan period only an effective Rural Electrification Scheme could start.

The Fifth Plan period saw electrification to only 45 Panchayat blocks which constituted only 10 to 15% of the household in electrified blocks. It was only during the 6th Plan period that a conscious effort was made to electrify maximum household. The statement of district-wise revenue blocks electrified is as under:

Table:- 2.10, District wise revenue blocks electrified in 1996-97

Plan Period	North	East	South	West	Total
Upto 3/75	Nil	Nil	Nil	Nil	Nil
5 th Plan	3	8	7	17	45
6 th Plan	19	51	49	25	144
7 th Plan	22	35	65	52	174
1990-91	1	10	14	17	42
Total	45	114	135	111	405

Source: The Sikkim Human Development Report, Draft Report, August 1999.

Demographic Attributes

The distribution of population in a region is generally uneven in nature owing to its physical, social and economic factors. The combination of fertility, mortality and migration plays an important role in the change of population in a region. The 1991 Census shows that the population of Sikkim was 4,06,457, which is distributed unevenly over 7,096 square

kilometre of area. The Census figures of 2001 and 2011 shows the population of 5,40,851 and 6,07,688 respectively. The state of Sikkim is divided into four districts which is further sub divided into eight sub divisions. The sub divisions are again divided into revenue blocks. The census figures of 1991 shows that the rural-urban population composition is 90.9% and 9.1% respectively. The average height of Sikkim varies between 3000m to 9000m Out of the total land area in Sikkim 80% of the area is not suitable for human habitation and about one-third of the area is covered with forests and snow. People generally lives in the river valleys, hill slopes, terraces and ridges where agricultural lands are available. The climate of Sikkim is extremely varied largely due to variations of elevations, temperature and rainfall. The monsoon mainly controls the agriculture, which influences the distribution of population in the district of Sikkim [Jana: 1972].

Out of the several factors, which influence the distribution of population in Sikkim, are uneven terrains, variation in climatic condition, lack of agricultural lands, remoteness, forest covers and poor communication system. The percentage of Schedule Caste and Schedule Tribe population are 6% and 22.36% as per the 1991 Census figures. The sex ratio shows 878 females per thousand of males. The

rural and urban population of the state are 369, 451 and 37, 006 respectively as per the 1991 Census figures. Similarly, the rural and urban population of the state are 4, 80,981 and 59, 870 respectively as per the 1991 Census figures. The increase of sex ratio from 835 to 878 in the same year is a good sign for the state of Sikkim. A separate section is devoted to the examination of the sex ratio of Sikkim in chapter IV, Levels of Educational Development in Sikkim. The table below shows the trends in population growth from 1901 to 1991.

Table:-2.11, Trends in the Population Growth 1901-1991

Year	Population (No.)	Growth Rate %
1901	59014	-
1911	87920	48.98
1921	81721	- 7.05
1931	109808	34.37
1941	121520	10.67
1951	137725	13.34
1961	162189	17.76
1971	209843	29.38
1981	316385	50.77
1991	406457	28.47
2001	540851	32.98

Source: District General Information, Census 1991, Government of Sikkim.

Table:-2.12, Density of Population

Year	Density of Sikkim
1901	8
1911	12
1921	12
1931	15
1941	17
1951	19
1961	23
1971	30
1981	45
1991	57
2001	76

Source: District General Information, Census 1991, Government of Sikkim.

If we notice at the share of population percentage, it is seen that the greatest share of population percentage is in the East district with 43.9% followed by South and West district with 24.3% and 24.1%. The district of North has the lowest population percentage of 7.7%. The high concentration of population in the East district can be attributed to the fact that it has suitable climatic condition, more availability of agricultural land a better transport and communication system and its proximity to the state capital Gangtok. On the other hand the Northern district of Sikkim has very thin population percentage. This can be attributed to the fact that the area is generally rugged with snow-capped hills, poor network of transport and communication system,

and unhealthy climatic condition. The availability of land for agriculture is also very low. The density of population as seen in the table below shows that it is higher in East district with 187 persons per square kilometres followed by South district with 131 persons per square kilometres. The West and North district has 84 and 7 persons per square kilometres.

Table:-2.13, Area, Population distribution, Share of Population and Sex Ratio in different districts of Sikkim in 1991

District	Area in KM ²	Population	Share of Population	Density of Population	Sex Ratio
North	4, 226	31, 240	7.7	7	828
East	954	1,78, 452	43.9	187	859
South	750	98, 604	24.3	131	892
West	1, 166	98, 161	24.1	84	915
Sikkim	7, 096	4,06, 457	100.0	57	878

Source: District General Information, Census 1991, Government of Sikkim.

One of the most important indicators of population growth is the growth rate of population. The growth rate reveals the reproductive behaviour of people in a region. The growth rate of population for India during 1971-81 has been 24.7% and 23.5% during 1981-91. There seems to be a decline in the growth rate of India over this decade. In

the light of India's growth rate, let us examine the growth rate of Sikkim for this period. The growth rate of Sikkim for 1971-81 has been 50.8% and 28.5% during 1981-91. There has been a sharp fall in the growth rate for Sikkim during this period. However, the growth rate of Sikkim for 1971-81 and 1981-91 are above the national averages. Though the sharp fall in the growth rate shows encouraging trends, in the presence of Family Planning Programmes, but still a lot has to be done to bring the growth rate down well below the national average.

Table:-2.14, Decadal Growth of Population in different districts of Sikkim during 1971-81 & 1981-91

District	Growth of Population in %	
	1981	1991
North	103.3	17.1
East	62.1	28.6
South	42.9	28.8
West	29.6	30.5
Sikkim	50.8	28.5

Source: Census of Sikkim, 1991.

The data above reveals that there has been a sharp fall of growth rate for the districts of North, East and South. The North district has shown a sharp fall of population growth from 103.3% in 1981 to 17.1% in 1991. Similarly, the East district and South district has seen a fall in growth rate from 62.1% to 42.9% in 1981 to 28.6% and 28.8% in 1991.

What surprises the most is that where the other three districts have shown almost 50% and more falls in the growth rate, the scenario in the West district has shown negligible change in its growth rate. The growth rate as seen in the figure is 29.6% in 1981 and 30.5% in 1991. There has been a rise of 0.9%.

Table:-2.15, Rural-Urban differential growth of Population in Sikkim during 1971-81 and 1981-91

District	Population Growth in % 1971-81		Population Growth in % 1981-91	
	<i>Rural</i>	<i>Urban</i>	<i>Rural</i>	<i>Urban</i>
North	102.4	135.9	18.2	- 2.9
East	39.2	152.1	52.1	- 26.4
South	35.9	399.0	37.2	- 51.5
West	29.1	54.8	30.6	3.7
Sikkim	39.5	160.0	39.0	- 28.0

Source: Census of Sikkim, 1991.

There has been a reorganization of boundaries of many urban centres in 1981-91. The figures above show that there has been a decline in the urban population in all the districts except the West during 1981-91. There has been a steady increase in urban population in the state due to migration within the state as well as the neighbouring countries because of various political and social reasons.

Let us now examine the fertility and mortality rates of Sikkim and compare them to the national average, which will show us the position of Sikkim in terms of fertility and mortality. The increase of population in a region can be attributed to fertility and mortality rates. The crude birth rate of India is 32.6 per thousand and the crude death rate is 11.1 per thousand. The crude birth rate of Sikkim is lower than India, which is 32.1 per thousand. The crude death rate for Sikkim is however higher which is 11.7 per thousand. The table below shows the Crude Birth, Death and Infant Mortality rate of Sikkim as per the 1991 Census figures.

Table:-2.16, Crude Birth Rate, Death Rate and Infant Mortality Rate of Sikkim during 1991-97

Year	Birth Rate	Death Rate	Infant Mortality Rate
1991	22.5	9.5	95
1992	20.9	5.8	95
1993	20.6	5.4	94
1994	20.1	5.2	92
1995	15.9	5.1	91
1996	19.7	5.0	91
1997	20.0	6.5	91
2001	18.1 (SRS2007)*	5.3(SRS2007)*	34(SRS2007)*

Source: Health Information Bulletin, Government of Sikkim, 1997.

* Source: RHS Bulletin, March 2008, M/O Health & F.W.,GOI

The mortality rate is higher in Sikkim as compared to the national average, which can be attributed to the factors like poor health care facilities, low level of educational attainment, unfavourable environment and lack of communication system. However, there has been a steady improvement in recent years because of improvement in health care facilities.