

Section 2

Introduction To The State And Its Capital



2.1 INTRODUCTION

Sikkim is small Indian State in the Eastern Himalayas extending approximately 114 kms from North to South and 64 kms from East to West having a total geographical area of 7096 sq kms. Sikkim is unique in its geographical location, biological wealth, environmental settings and cultural diversity. The State is circled in the North by the Tibetan Autonomous region of China, Bhutan in the East, Nepal in the West and West Bengal in the South. Most of Sikkim lies on the lesser and greater Himalayan Zone with girdling ridges which contain some imposing peaks and high altitude passes. The exalted peaks of Khanchenjunga (8595 m) which is the third tallest mountain in the world and high altitude Nathula pass (4728m) which has recently been opened as the border trade post with the Tibet Autonomous Region of China are all located in the State.

The State ranks high in the Human resources Index and has a proactive government. The immemorial lofty ranges of the Himalayas, scenic beauty, rich biodiversity, culture, peace & tranquility of Sikkim has won global admiration and national accolades.

Sikkim is endowed with rich biodiversity elements with global value. With 26 % of the flowering plants found in the country i.e. around 4500 species , it has 424 identified medicinal plants, 480 orchid varieties, 450 species of trees, 36 species of Rhododendron, 150 species of mammals, 550 of birds, 650 species of butterflies and moths(Source: Sikkim Study Series, vol.I).

2.2 LOCATION AND CONNECTIVITY

Gangtok, the capital city of Sikkim is located in the East District and lies between 27° 21' to 27° 16' N latitude and 88° 37' longitude with altitude of 5500 ft above mean sea level. Gangtok is connected by National Highway to Siliguri which is a major town in the North Bengal. The nearest airport and railhead near Siliguri is 117 kms from Gangtok.

The public transport within Gangtok comprises of city buses with a modal share of less than 1%. ***The share of personalized vehicles and taxis combined was observed at 98% of the total vehicles in Gangtok, which is very high.***

Table 2.1 : Traffic Composition at intersections (%)

Location	Two wheelers	Car/Jeep/Taxi	Bus	Goods Vehicles
GICI	8.0	89.5	0.6	1.9
Hospital	7.7	91.5	0.4	0.4
Metro	10.6	88.7	0.4	0.3

2.3 PHYSIOGRAPHY

2.3.1 Landscape

The topography of Sikkim is characterized by great variations in elevation, ranging from 250 m to 8495m. Most of the Sikkim is in the Lesser and Greater Himalayan Zone. The State is girdled by high ridges on the North, East and West contain some imposing peaks and high altitude passes.

2.3.2 Glaciers & Lakes

Glaciers are the perennial sources of fresh water that is discharged in the two major rivers, namely Teesta and Rangit. Records available suggests that as many as 84 glaciers in Sikkim covering an area of 440 sq kms, with permanent snow fields measure around 251 sq km area which when added to glaciers cover an area of 691 sq kms.

Sikkim consists of more than 150 lakes located at different altitudes and are natural water bodies mostly as a product of glaciations and are confined to high altitude areas. Most of the lakes are source of fresh water and also of religious significance attracting pilgrims and

tourists to the State. The most famous ones are Tsomgo and Khecheopari lakes. (Source: Sikkim Study Series, vol. I)

2.4 GEOMORPHOLOGY AND SOIL

Distinct micro-morphology features of Sikkim terrain include terraces and floodplains, valley-side slopes and landslide slopes, alluvial cones of different types and generations, tors, kettle shaped depressions, terrace isles, sickle shaped rags, beveled plains, undulating plains, with deeply dissected valleys, glacial or peri-glacial deposits related sedimentary structures crevasses, soil series or poly pedan, gorges etc. These forms have been produced by the trunk stream Teesta and its innumerable tributaries-one of the important agents of denudation and deposition which moulds the landscape. (Mukhopadhyay 1998).

The hills of Sikkim mainly consist of gneissose and half-schistose rocks, making their soil brown clay, and generally poor and shallow. The soil is coarse, with large amounts of iron oxide concentrations, ranging from neutral to acidic and has poor organic and mineral nutrients. This type of soil tends to support evergreen and deciduous forests.

A large portion of the Sikkim territory including Gangtok is covered by the Precambrian rock and is much younger in age than the hills. The rock consists of phyllites and schists and therefore the slopes are highly susceptible to weathering and prone to erosion. This combined with the intense rain, causes extensive soil erosion and heavy loss of soil nutrients through leaching. As a result, landslides are frequent, isolating the numerous small towns and villages from the major urban centres

The moisture content in the soil, mostly depending upon the soil thickness, has an explicit impact on forest type and coverage in any area. The entire state primarily consists of gneissose rocks and half-schistose rocks. The soil is developed from the gneissic group of rocks. They are typically coarse, often with ferric concentrations, neutral to acidic with poor organic/mineral nutrients. The high intensity of rainfall in the state often causes extensive soil erosion and heavy losses of nutrients of land by leaching.

Table 2.2: Area Statistics for Sikkim (Sq. Kms.)

S.N.	Class	Reserve Forest	Revenue Block	Total	% of Total
1	Crop land(Terraced/Semi Terraced)	0.00	604.85	604.85	8.52
2	Fallow/Scrub in Revenue Blocks	0.00	155.69	155.69	2.19
3	Sal dense forest	5.30	0.77	6.07	0.09
4	Sal open forest	15.93	1.54	17.47	0.25
5	Sal degraded forest	3.32	0.71	4.03	0.06
6	Mixed dense forest	464.46	138.88	603.34	8.50
7	Mixed open forest	433.37	333.38	766.75	10.81
8	Mixed degraded forest	194.56	235.06	429.62	6.05

S.N.	Class	Reserve Forest	Revenue Block	Total	% of Total
9	Dense conifer forest	351.94	16.14	368.08	5.19
10	Open conifer forest	340.63	21.55	362.18	5.10
11	Degraded conifer forest	156.89	16.30	173.19	2.44
12	Oak-Rhododendron forest	100.34	26.24	126.58	1.78
13	Scrubs in reserve forest	101.87	0.00	101.87	1.44
14	Forest blanks	90.56	0.00	90.56	1.28
15	Alpine scrub	611.44	27.72	639.16	9.01
16	Alpine pastures	431.32	0.00	431.32	6.08
17	Alpine barren	815.80	2.35	818.15	11.53
18	Snow	1018.23	5.41	1023.64	14.43
19	Glaciers	208.23	0.00	208.23	2.93
20	Lakes	32.30	0.70	33.00	0.47
21	Rivers/major streams	31.81	32.50	64.31	0.91
22	Dry river beds	31.49	9.10	40.59	0.57
23	Built-up area	0.30	3.24	3.54	0.05
24	Land slide areas	5.37	5.16	10.53	0.15
25	Miscellaneous	6.93	6.30	13.23	0.19
	TOTAL	5452.39	1643.59	7095.98	100.00

Source: Sikkim Statistical Profile 2004-05, Department of Statistics, Economics, M&E

2.5 CLIMATE

Sikkim is characterized by a Himalayan type of climate. Altitude is the main factor controlling the climate and weather condition of the whole state including the capital city of Gangtok. The climatic conditions vary greatly due to the wide fluctuations in elevation ranging from 800-20,000 feet and sharp edged mountains. Relief features such as high mountains act as barriers for the movement of the Monsoon winds. Low temperature, high rainfall on windward slopes, comparatively dry on the leeward side and heavy precipitation in the form of snow at the mountain tops are the main features of the climate.

2.5.1 Weather

The weather of Gangtok is alpine with warm summer and cold winters. Temperatures range from a high of 25 °C (77 °F) in summer to a low of about 3 °C (37 °F) in winter. Snowfall is rare, and in recent times Gangtok has received snow only in 1990, 2004 and 2005. Temperatures below freezing are also rare. The region receives an annual rainfall of 3494 mm over 164 rainy days. The lower Himalayas in general are composed of labile rock formations and therefore prone to landslides even in dry seasons. These landslides can result in the capital being cut off from other parts of Sikkim and the mainland India.

2.6 FLORA AND FAUNA

Sikkim is well-known for its biodiversity. The steep vertical climb from the plains of West Bengal to the high altitude areas of Sikkim represents one of the world's steepest altitude gradients. This accounts for the incredible variety of flora and fauna found in the region, ranging from the tropical to sub-arctic.

Sikkim is a botanist's paradise. It is endowed with rich biodiversity elements with 26 % of the flowering plants found in the country i.e. around 4500 species, it has 424 identified medicinal plants, 480 orchid varieties, 450 species of trees, 36 species of Rhododendron, 150 species of mammals, 550 of birds, 650 species of butterflies and moths. Of these 19 species of mammals, 11 species of birds and 65 species of plants are threatened and endangered. Conservation of these species and their habitat warrants special attention in the State. About 72 % of the Indian species of Rhododendrons are found in Sikkim and hence called the cradle of Indian Rhododendrons. The most majestic among the famous rhododendrons is the *R. grande*, a tree that grows up to 30-40 ft in height and up to 5 ft in girth (Source: Sikkim Study Series, vol.I).

Sikkim has seen a wide range of famous explorers, some of whom visited the region in the 19th century. One of these explorers was Sir Joseph Hooker, who identified a large number of Sikkim flora and published his findings in his Himalayan Journals sometime in the middle of the 19th century.

Flora around Gangtok includes temperate, deciduous forests of poplar, birch, oak, and elm, as well as evergreen, coniferous trees of the wet alpine. Densely forested regions of these evergreens lie just around the town. A wide variety of rare orchids are often featured in flower shows around the city. Sunflower, marigold, poinsettia, and other flowers bloom in November and December. Bamboo grows in abundance along the slopes of Gangtok. In the lower reaches of the town, the vegetation graduates from alpine to subtropical and temperate deciduous.

The diversity in the plant world is complemented by a similar variety in the animal kingdom. Over 400 varieties of butterflies and moths adorn the forest with colour and life. Giant Lammergeier Vultures, Eagles, Whistling Thrush, Minivets, Bulbuls and Pheasants are some from among the 550 species of birds recorded in Sikkim some of which have been declared endangered.

Among the more commonly found animals in the alpine zone are yaks. They are domesticated and reared in North Sikkim mainly for their economic productiveness. Yak milk is used to make butter 'churpi', the wool comes in handy as raw material for carpets and blankets. The musk deer, found in the upper temperate regions, is today a species in the endangered list. A common denizen of Sikkim is the muntjac, or the Barking Deer.

Among the more exotic mammals is the Red Panda which lives mostly on treetops. It is found at altitudes ranging from 6,000 to 12,000 feet. The snow leopard is an almost mythical animal. It has rarely been sighted and to date, only two field zoologists have succeeded in

photographing this elusive animal in its habitat which can vary from 5,000 feet to as high as 18,000 feet. Blue sheep, flying squirrels, binturong, tahrs, marmots and musk deer are at home in this cool blanket of green.

2.7 AGRICULTURE

Around 90% of the geographical area of Sikkim is forest and barren land which has become a good source and house for flora and fauna. The fauna of North Sikkim includes Yaks, Shapi, wild ass, blue sheep etc and the flora includes mostly Rhododendron.

The hill slopes have been converted into farmlands using terrace-farming techniques and is used for cultivation. Numerous snow-fed streams in Sikkim have carved out river valleys in the west and south of the state which flows through the state from north to south. About one-third of the land is heavily forested. Cardamom is the main cash crop in the district, which makes a premier part of economy. Besides this other crops like rice, millet, corn etc. also grow in limited quantity.

Cabbage and Potato are produced in large quantity in Lachung Valley and are exported out of state. Radish too is exported from this area. Besides this other normal vegetables of daily consumption like, peas, cauliflower, green leaves are found all over the district. A large quantity of fruits that is grown in the district is apple, which is found in the Lachung Valley. Other fruits like peach, guava, orange, plum, phunsay grow in plenty.