

**CHAPTER -2**

**THE STUDY AREA, TERRAIN PROFILE AND  
HUMAN GEOGRAPHICAL MOSAIC OF SIKKIM**

## SECTION-I

### THE STUDY AREA

#### Introduction

No region in the world excites the imagination and calls up visions of the exotic more than the Himalayas. Their soaring peaks and fertile valleys have nourished some of the world's most ancient cultures and religions. (Maurice Strong, 1988) (1). The Himalayas have, since ages regulated the climates, and nourished the biodiversity, including the natural and human ecosystems, not only within its peaks, ridges and valleys, but have encompassed almost the entire Indian Subcontinent.

Sikkim is a tiny hill state ensconced in the Eastern Himalayas, sandwiched between Tibet, Nepal and Bhutan. The narrow Darjeeling-Siliguri corridor separates it from Bangladesh. It is a meeting point of multiple cultural groups. Lying between latitudes 27 degree N and 28 degree N, and longitudes 88 degree E and 89 degree E, it occupies an area of 7096 sq kms. Almost entire Sikkim State forms the catchment of river Tista, which flows North-South, bisecting the state in two halves. River Rangit a major tributary, originates from the Kanchandzonga massif and flows through West and South Sikkim, till it unites with Tista at the Melli confluence point. (Map No 1).

From time immemorial, the Rangit had a strong impression on the life and activities of the people inhabiting its catchment area. Its name is often referred to in numerous Sikkimese myths and folktales. Although it is a tributary to the Tista, it claims somewhat special attention for its individual geographic identity, hydrological potentiality, economic viability and aesthetic beauty. (Maitreyi Barua, 1988). (2)

The Rangit basin is located in the Sikkim- Darjeeling Himalayas between latitudes 27 degree 02 minutes N to 27 degree 33 minutes N and longitudes 88 degree 01 minutes E to 88 degree 27 minutes E. The Mount Narsing-Mainam-Tendong Range delimits the Eastern catchment, while the Singalila Range demarcates the Western boundary. (Map No 2). The township of Legship in West Sikkim District virtually divides the Rangit in two halves, the catchment area North of Legship being the Upper Rangit Basin, and to the South being the Lower Basin.

### Aim

The aim of this study is to address the human ecology aspects of the Upper Rangit Basin. The study of human ecology being holistic, it was pertinent that the research includes the physical environment as well as the human ecosystems. It was therefore necessary that the physical terrain and climatic characteristics and the human geography are given due weightage in the description of the study area.

### Location, Physical and Climatic Features

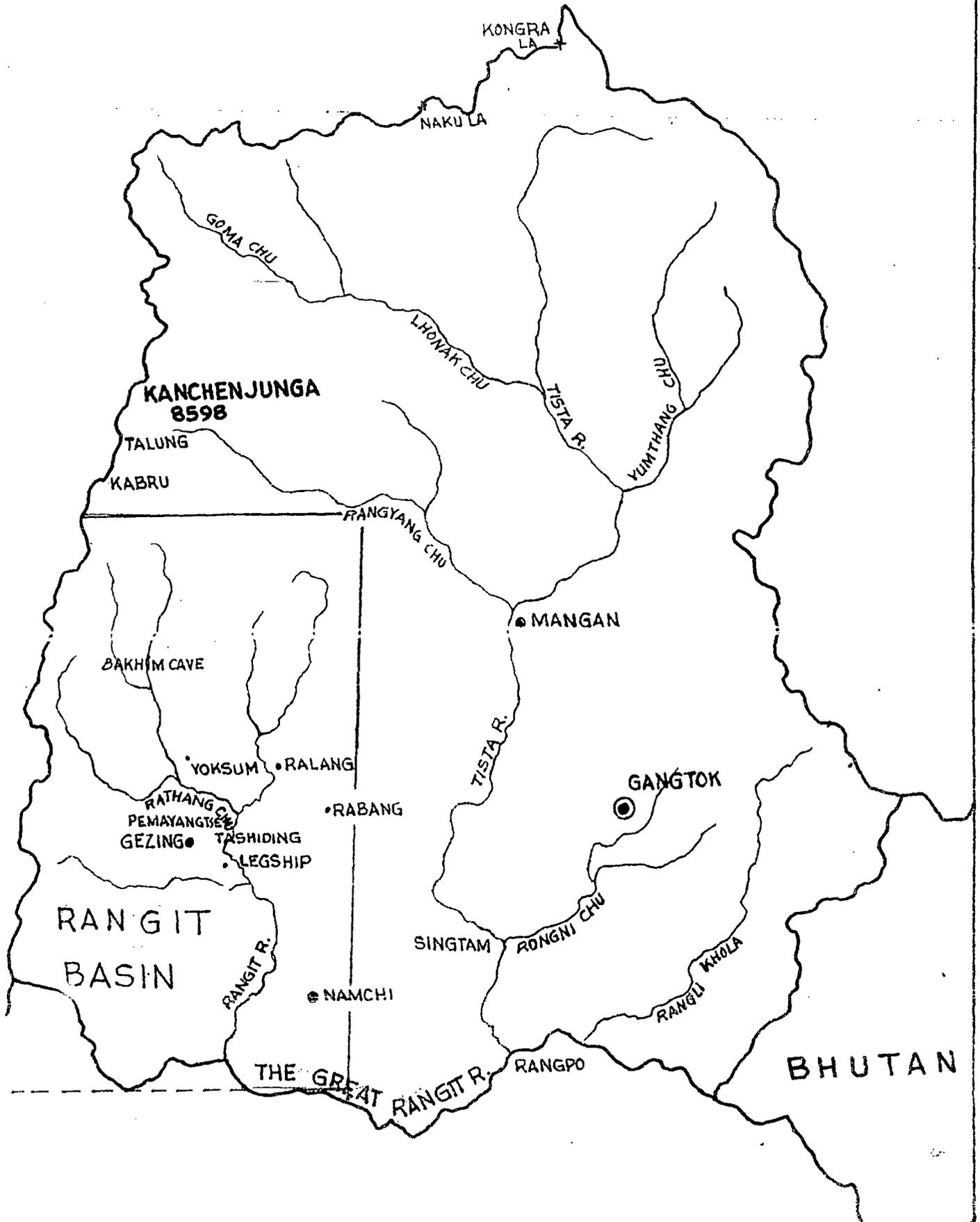
The Rangit catchment (zone under study) is located in the South and West districts of Sikkim. The area lies between 27 degree 16 minutes 3 second to 27 degree 32.2 minutes North latitudes and 88 degree 2.5 minutes to 88 degree 25 minutes East longitudes (Map No 3). The catchment area is drained by its tributaries Reli Chu, Rathang Chu, Rangit Chu etc. The rivers generally flow in North-South direction. The terrain is mainly mountainous in nature with steep to very steep slopes. The predominant aspects of terrain are East and West. The elevation ranges from 600m to 7338m.

The climate is cold and humid. Temperature varies between 1 degree C to 32 degree C. There are three distinct seasons viz, summer, rainy and winter. The rains commence during May and last upto late October. Peak rainfall occurs during July and August. Average annual rainfall is 2620.9mm. The average annual rainfall pattern is given at Fig No 2.1. The winter season ranges from November to February.

### Geology

Pre-Cambrian rocks represented by Khangehedzonga gneiss, Chungthang formation, Darjeeling gneiss, and Rangit schist formation cover a major portion of the Sikkim Himalayan deposition which took place initially in a compound geo-synclinal basin with a sub-merged miogeanticlinal ridge. The subsequent pre-Cambrian orogeny led to rising of this mio-geoantlelinal ridge dividing the basin into the Northern Eu-geogyncline and Southern miogeosyncline in which deposition of palaeozoic rocks took place. Detached outcrops of post palaeozoic rocks are also present in extreme North. The area suffered three major phases of tectonic movements leading to folding and faulting which gave rise to nappe and sub-nappe structures and formation of release faults.

# MAP OF SIKKIM



In the basin pre-cambrian rocks belonging to the Khangchendzonga gneiss group, Chungthang formation group, Darjeeling gneiss group and early Palaeozoic disposed off in the area due to geological structures. Stratigraphic disposition is not actually seen in the field. The tectonic trend in the area is dominantly North-East and South-West but in West it is North-Northwest and South-Southeast. Due to presence of cross faults specially in South-West corner, both the trends are present on either sides.

Daling phyllites are prone to extensive landslides with a slump type failure which is restricted within slope wash material. Landslides do occur in granite gneiss and quartzite but to a restricted scale and are mostly debris avalanches or slide or a rock fall.

### Soils

The soils of the catchment are mostly of recent origin and are not well developed. Generally the soils are loamy sand to silty clay loam in texture, dark greyish brown to dark brown in colour, excessively drained to moderately well drained and developed on micaceous gneissic parent rock and are susceptible to severe erosion hazards due to differences in altitude, slope and rainfall.

### Vegetation

The predominant vegetation in the catchment is forests. The agriculture is practiced in low to medium altitudes areas. Scattered scrub and barren rocky areas are also more common. The forests are classified into following major types in accordance with the elevation and all these exist in Upper Rangit Catchment (NHPC Report, 1998)

(3) :-

- . East Himalayan sub-tropical wet hill forests.
- . East Himalayan wet temperate forests.
- . East Himalayan mixed coniferous forests.
- . Alpine scrub and pastures.

### References

1. Maurice F. Strong; The Himalayan Dilemma, UN University, New York, 1989.
2. Barua, Maitreyi ; Habitat and Economy in An Eastern Himalayan Enclave : A Case Study of the Rangit Basin, University of Calcutta, 1988.
3. Forestry and Ecology Division; Catchment Characteristics Rangit Hydel Power Project, Sikkim, NHPC Faridabad, 1998.

## SECTION-II

### TERRAIN ANALYSIS OF RANGIT CATCHMENT

#### General

Upper Rangit river catchment has 26 watersheds covering an area of 979.02 kms. The catchment has basic problem of high run-off and high sediment loads. In addition, areas having steeper slopes are being cultivated on partly terraced lands resulting into erosion problems. The biotic interferences such as heavy grazing, construction and widening of roads, mining operations also aggravates erosion levels in the area. The frequent occurrence of land slips, landslides and stream bank erosion also indicate the high run-off and sediment loads in the area. In order to preserve catchment conditions and regulate the run-off / erosion level in the catchment, the catchment area treatment plans were started in 1995. These watersheds for treatment were selected based on erosion intensity physiography and landcover (NHPC Report) and the total area under these six watersheds under treatment is 12,992 ha. The present study was conducted to assess baseline watershed characters to facilitate monitoring of catchment treatment plans undertaken in the area. (NHPC, 1998) (1).

In the light of site specific problems, the assessment of spatial run-off/erosion patterns, sediment discharges and landslide proneness conditions would help in diagnosing the pretreatment scenario and analyse catchment characters. This would essentially require spatial identification and quantification of various underlying factors such as vegetation and landcover patterns, greenness and production conditions, their associations with topography. For instance it is necessary that monitoring of ecologically sensitive areas such as high slope agriculture and degraded forests, gully and bank erosion areas etc, is highly required to assess catchment conditions. This would only be possible through analysis of integrated units of drainage - slope -elevation - vegetation complexes (Fig 2.2). Accordingly, the study was designed on following lines: -

- (a) To provide baseline characterisation of vegetation and landcover, topography conditions, sediment discharges at watershed level.
- (b) To assess potential indicators of change which can be used as diagnostic elements for analysing the changes in the watersheds under treatment.



The baseline assessment at the catchment level was done using only vegetation and landcover conditions and biomass distribution patterns. On the other hand, the detailed analysis of all the five spatial layers was done for the six watersheds which are presently under treatment. These spatial layers are further integrated in GIS domain for identification of sensitive indicator zones.

#### Assessment of Baseline Vegetation and Landcover Conditions –Rangit Catchment

The false color composite of satellite data pertaining to Rangit catchment is presented in Satellite Photo plate No 2.1. The multi-spectral remote sensing data which was used in the study enabled to delineate different landcover classes based on the unique spectral properties of each class.

Forests. The vegetation and landcover statistics of the catchment are presented in Table 2.1 and the Satellite Photo Plate No 2.1. It is found that dense forest is the predominant landcover in the catchment and constitute 38.96% of the area. These forest are present in extensive patches over high altitudes covering the watershed areas of Rel Chu and Kayam Chu rivers in the North-Eastern part of catchment and Chokchurang chhu and chhiyjyum khola nallas in South-West part of the catchment. On the other hand, in the lower altitude reaches of the catchment, the dense forests are found in fragmented pockets especially in the watersheds which are presently under treatment activity. The open forests constitute only 1.37% of the total catchment and are located in the lower altitudes. The scrub land and degraded forests constituting 2.78% of the catchment are mainly confined to high hill slopes and hill plateaus.

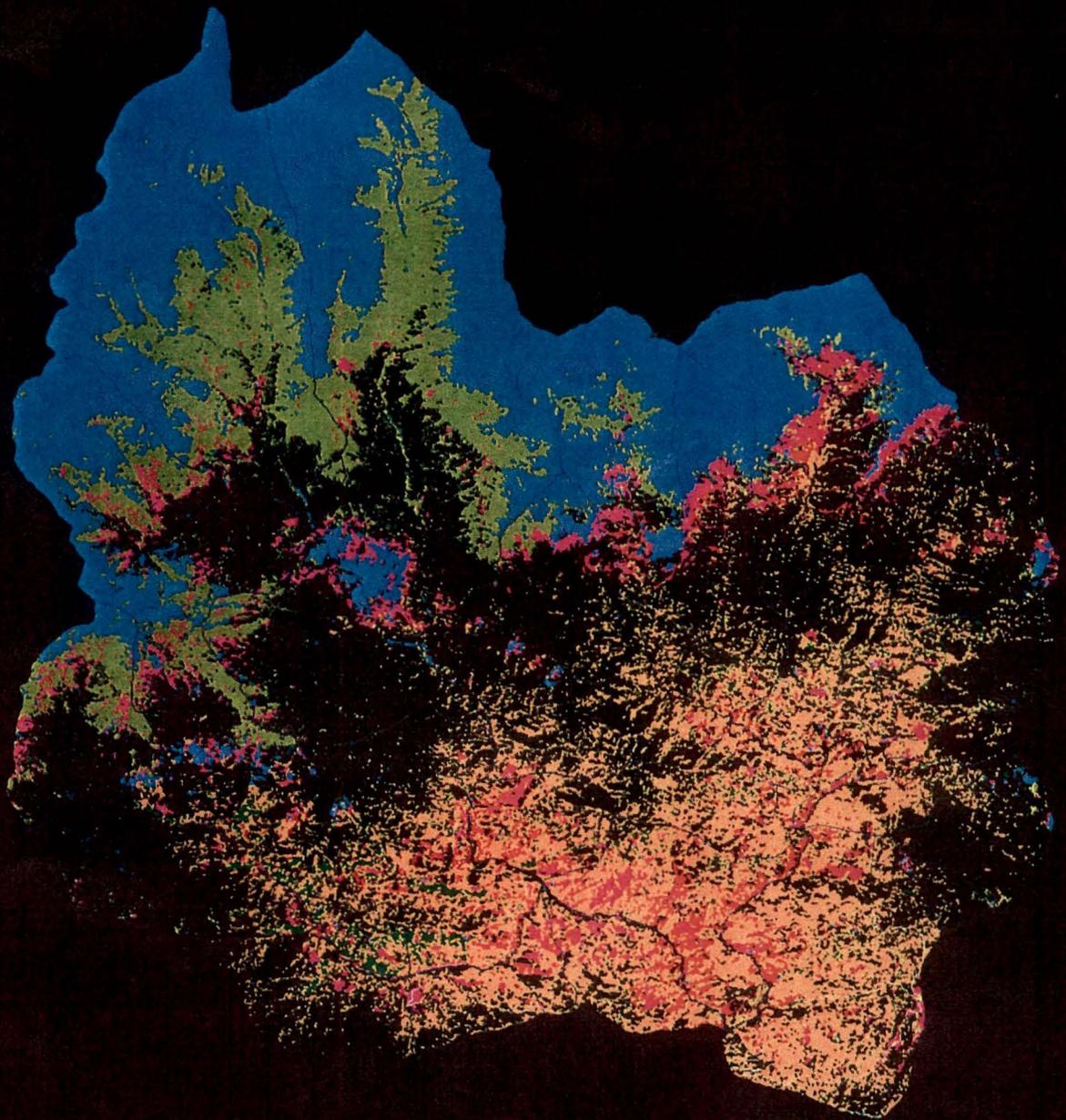
Agriculture and Fallow Lands. The agriculture activity is found distributed in all the watersheds located at an altitude less than 3000 mts. The agriculture areas covers 160.88 sq.km contributing to 16.44% of the total catchment. The agriculture is found prevalent at all levels of slopes of the terrain. The fallow lands and waterlands were together classified as covering 50.75 sq.km. These are mostly on high slopes and hill plateaus and also found interspersed with agriculture. These lands are found with marginal distribution and grasses which contribute a lot towards fodder resources for the cattle in the area. Overall biomass strata distribution pattern is depicted in Table No2.2.

The alpine vegetation which essentially include alpine pastures and scrubland covers 117.72 sq.km in the catchment contributing 12.02% of the total catchment. These extensive pastures are reported under high biotic pressure due to heavy grazing by cattle and hence needs necessary resources accounting and management strategy. In addition, the alpine barren land and rocks are estimated as 48.79 sq.km of the area. Based on the vegetation and landcover distribution and altitude, the entire catchment can be divided into 3 distinct zones :-

- (a) Zone 1 Mosaic of Forest –Agriculture-Barren Lands(<2400mt).
- (b) Zone 2 Predominantly Forest areas with sparse agriculture (2400-3700mt).
- (c) Zone 3 Alpine Vegetation and Snow (>3,700mt).

The three distinct zones can also be very well seen from the overview of the Rangit catchment (Satellite Photo Plate No 2.1). These 3 zones require a zone specific conservation strategies and watershed treatment plans. The watersheds which are under treatment are predominantly located in Zone 1 and partly in Zone-3.

# VEGETATION AND LANDCOVER CLASSIFICATION RANGIT CATCHMENT, SIKKIM



- |               |                    |                    |                   |
|---------------|--------------------|--------------------|-------------------|
| DENSE FOREST  | OPEN FOREST        | DEG.FOREST / SCRUB | ALPINE VEGETATION |
| AGRICULTURE   | FALLOW / WASTELAND | ALPINE BARREN      | SNOW / CLOUD      |
| WSHD BOUNDARY | RF BOUNDARY        | ROADS              | FED - NRSA / NHPC |

RANGIT CLASSIFIED DATA



**TABLE-2.1 VEGETATION AND LANDCOVER DISTRIBUTION IN THE  
UPPER RANGIT BASIN**

SL#	Category	Area (km2)	%
01.	Dense Forests	381.38	38.96
02.	Open Forests	13.44	1.37
03.	Deg Forests	27.27	2.78
04	Agriculture	160.88	16.44
05	Alpine Vegetation	117.72	12.02
06	Fallow/Wasteland	50.75	5.19
07	Snow	178.79	18.26
08	Alpine Rock	48.79	4.98
	Total	979.02	100.00

**TABLE -2.2 BIOMASS STRATA DISTRIBUTION PATTERN IN CATCHMENT  
AREA**

SL#	Biomass Strata	Area (Km2)	% of total Area
1	Highest	78.76	8.04
2	Very high	220.27	22.49
3	High	230.64	23.55
4	Low	203.66	20.08
5	Very Low	245.69	25.09
	Total	979.02	100.00

References

1. Forestry and Ecology Division; Catchment Characteristics Rangit Hydal Power Project, NHPC, Faridabad, 1998

**SECTION-III**  
**HUMAN GEOGRAPHICAL MOSAIC OF SIKKIM**

**Physical Features**

Sikkim extends from 27 to 28 degrees N latitude and 88 to 89 degrees E longitude. Situated in the Eastern Himalayas, its geographical location is invaluable to India. A cursory glance at the location of Sikkim on the map of India reveals the extraordinary strategic importance of the state. Sikkim shares international boundaries with three neighbouring countries, viz China(Tibet), Nepal and Bhutan . Although barely 114 Km long and 64 Km wide ,this tiny mountain state merits much attention.(Maitreyi Choudhury, 1998) (1)

Having an area of 7096 Sq Km ,the whole state is divided into four administrative zones: North,South ,East and West districts with their headquarters at Mangan ,Namchi,Gangtok and Gyalshing respectively. As a part of the inner ranges of the Himalayan Mountains ,it is wholly a hilly cum mountainous state with varied elevations. The land area can be grouped as :-

- (a) Lower Hills. Altitude from 300 to 1500 m above mean sea level(M.S.L).
- (b) Mid Hills. Altitude from 1500m to 2000 m above M.S.L.
- (c) Higher Hills. Altitude from 2000 m to 3500 m above M.S.L.
- (d) Alpine Zone. Altitude above 3500 m above M.S.L to snow line at approximately 5000m above MSL.
- (d) Snow Land . Higher reaches of mountains and glaciated areas.

Owing to such variations in elevation, the climate of Sikkim varies from sub-tropical to alpine. Accordingly the vegetation can be classified into four major types viz sub-tropical wet type ,wet temperate type ,mixed coniferous type and alpine scrub and pastures. (NHPC, 1998) (2).

About two thirds of the state consists of very lofty mountains which remain perpetually snow covered. Mount Khanchendzonga lies in the North Western side of

Sikkim bordering Nepal. Following are the important peaks and passes located in Sikkim (adopted from Maitreyi Choudhury, 1998) (3) as given at Table No 2.3:-

**TABLE NO 2.3**

Sectors	Peaks (above 6000m)	Passes
Northern Sector	(i) Lhonak	i) Chorten Nyima La
	(ii) Sentinel	ii) Naku La
	iii) Chorten Nyima	iii) Kongra La
	iv) Khora Khang	iv) Tsak La
	v) Khora Tso Gna	v) Bam Tso La
Eastern Sector	vi) Pauhunri	vi) Say SayLa
		vii) Ghora La
		viii) KhanchungLa
		ix) Pata La
		x) Thangkar La
		xi) Nathu La
		xii) Jelep La
		xiii) Batang La
		xiv) Dongkiya La
		xv) Jonsang La
Western Sector	vii) Jonsang	xvi) Khsng La
	viii) Langbu Pyramid Peak	xvii) Daiu La
	ix) Tent Peak	
	x) Nepal Peak	
	xi) Khanchendzonga	
	xii) Kabru	
	xiii) Talung	
	xiv) Rathong	

There is only one major river system in the state of Sikkim that is river Tista . The Chola/Dongkiya Range in the East and the Singalila Range in the West determine the drainage basin of the Tista . The entire state is drained by the Tista, its numerous tributaries, and innumerable sub-tributaries. The Tista river system within the state of Sikkim is listed below at Table No 2.4 (Maitreyi Choudhury, 1998) (4) :-

**TABLE NO 2.4****TISTA TRIBUTARIES**

S. No	Eastern Tributaries	Western Tributaries
(i)	Chhombo Chhu	Zemlu (Lachen) Chhu
(ii)	Lhasa Chhu	Rangyong Chhu
(iii)	Kelep Chhu	Rangphap Chhu
(iv)	Gyamthang Chhu	The Great Rangit
(v)	Burum Chhu	
(vi)	Gey Chhu	
(vii)	Tarum Chhu	
(viii)	Rasbom Chhu	
(ix)	Lachung Chhu	
(x)	Ong Chhu	
(xi)	Chakung Chhu	
(xii)	Dik Chhu	
(xiii)	Rongni Chhu	
(xiv)	Rangpo Chhu	

The Rangit Chhu, a right bank tributary of the Tista originates from comparatively low altitude area in the South district of Sikkim. However, its chief feeder, the Rathong Chhu, originates from the Rathong glacier in the West district. The Rangit receives a large number of tributaries on the way to Tista. Apart from the Rathong Chhu, it is fed by the Rimbi, the Kalej, the Rishi, the Roathak, the Rammam and the Manpur Khola. It also receives some tributaries from the Darjeeling hills of West Bengal, namely, the Little Rangit, the Jhepi and the Ragnu Khola where it is aptly called the Great Rangit. The Great Rangit confluences with the main stream, the Tista at Melli confluence.

The present landscape of Sikkim is in a state of rapid evolution. The ongoing glacial, periglacial, glaciafluvial, fluvial and pluvial activities are continually reshaping the face of this young mountain topography. While the swift flowing rivers are transporting loads of eroded materials by chiselling the valley sideslopes, many of the lakes are choking with sediments. In recent years, there is a noticeable reduction in the size of some of the larger lakes of Sikkim. (Maitreyi Choudhury, 1998) (5).

### History

The history of the emergence of the kingdom of Sikkim can be traced back to 1642, when Phuntshog Namgyal was consecrated as the first king of Sikkim by three monks at Yoksom in Western Sikkim. These three monks Lhatsum Chhenpo, Nga-Dag Lama and Kathog Lama conferred on him the title of Dharam-Raja (Chogyal). The Dalai Lama recognized the new king as the ruler of Sikkim and sent him a silk scarf, the mitre of Guru Rinpoche and the most precious sand image of the Guru as a 'present'.

Sikkim's boundary, at that time, extended as far as Limbuan in the West, Chumbi valley and parts of Western Bhutan in the East. Southward it extended up to Titaliya and included the whole of Darjeeling district. However, from the beginning of the seventeenth century, the country had to face numerous invasions from its neighbouring countries, Bhutan and Nepal. Consequently, a large portion of its land was annexed by these countries. The Nepalese conquered the lower Tista, Bhutan annexed the entire region on the East of the river Tista including the present day Kalimpong sub-division and Tibet took over Chumbi valley; and thus made the Chola and Jalepla ranges Northern and Eastern boundary (K.S. Singh, 1993) (6)

The Anglo-Gorkha war and the signing of the Treaty of Sugauli (1815) between Nepal and the East India Company and signing of the Treaty of Titaliya (1816) between the East India Company and Sikkim introduced a new phase in the history of Sikkim.

By the Treaty of Sugauli the Raja of Nepal agreed never to molest or disturb the Raja of Sikkim, and in case of any difference between the state of Nepal and the Raja of Sikkim, the difference would be referred to the arbitration of the British Government. Under this treaty, Nepal surrendered to the Company, all the hilly regions situated to the East of the Mechi river and to the West of Tista river, which was originally a part of Sikkim but had been annexed by Nepal in 1788-90. By the Treaty of Titaliya the East

India Company restored to Sikkim the above. Besides, the British secured the right of arbitration in case of dispute between Sikkim and Nepal or any other neighbouring state.

The Treaty of Titaliya marked the beginning of the British influence in Sikkim. By the Treaty of Tumlong (1861), the British could gain a foothold in Sikkim. The British activities in Sikkim gained momentum with the establishment of its Residency at Gangtok and the appointment of the first political officer, JC White, in 1889. The British protectorateship over Sikkim was recognized by China in 1890.

Under the British protectorateship the power of the Maharaja of Sikkim was considerably reduced and he had no role in the administration of the country. It was during the reign of the Maharaja Tashi Namgyal (1914-68) that full power was restored.

The period following the departure of the British from India was marked with the radical change in the political scene of Sikkim. On the one hand independent India signed a standstill agreement with Sikkim in 1948, in order to retain their respective rights and obligations evolved through earlier treaties and conventions; on the other, the educated elites of the state, while drawing inspiration from the freedom movement in India, started various political parties. The main political parties formed in the late forties were Sikkim Praja Sammelan, Praja Mandal and Praja Sudharak Samiti. In December 1947, these parties merged to form a new political party, namely the Sikkim State Congress. The Sikkim State Congress made a three fold demand on the Government ; the abolition of landlordism ; the establishment of a responsible government and ; the accession of Sikkim to India. To press its demands for reforms the Sikkim State Congress, besides organizing mass demonstrations, started a 'No Rent' campaign, leading on to a political impasse. Consequently, the Indian Government took over the administration and appointed JS Lall as the Dewan of Sikkim. During his term as the Dewan, house tax and forced labour were abolished in order to facilitate the withdrawal of the 'No Rent' campaign.

The Indo-Sikkim Treaty (1950) was signed to give definite shape to Indo-Sikkimese relations. The 1950 treaty was an important landmark in the political development of Sikkim, for with this the Government of India revoked all the previous treaties and affirmed the protectorate status of the state under independent India.

Defence, external affairs, customs and communications of Sikkim became India's responsibility. The 1950 treaty affirmed India's authority over Sikkim.

The period between 1950 and 1973 was marked by several important events in Sikkim, like the emergence of various political parties, formation of the State Assembly, introduction of franchise on the basis of party formula. The tension that developed between the Durbar and the various political parties led to the agitation of 1973, the signing of the May Agreement of 1973, formation of a popular ministry in 1974, and finally its merger with the Indian Union in 1975. Sikkim became the twenty-second state of the Indian Union on 26 April 1975.

## People

### Demography

Sikkim has three main ethnic groups; the Lepchas who were the original inhabitants of the state; the Bhutias who migrated from Tibet in the seventeenth century; and the Nepalese whose migration from Nepal started in the nineteenth century.

The first official census of Sikkim, taken in 1891, presents the following figures for different groups of population (Risley, 1894) (7) :-

Race/Caste	Total
Lepcha	5,762
Bhutia	4,894
Limbu	3,356
Gurung	2,921
Murmi	2,867
Rai/Jimdar etc	2,020
Khambu	1,963
Kami	1,670
Brahman	1,414
Mangar	901
Chhettri	829
Newar	727
Darzi	287

After 1891 only Lepchas, Bhutias and Limbus are taken as distinct ethnic groups while all other groups mentioned above came to be regarded as different castes of the Nepali Society.

Writing in 1909, JC White gave the number of Lepchas inhabiting Sikkim as about 6,000, Bhutias as a little over 6,000 and Nepalese as nearly 50,000 (White, 1909)(8).

According to the 1931 Census Reports, out of a total population of 109,808 there were 13,060 Lepchas, 11,955 Bhutias and the rest were mainly Nepalese. The 1971 Census Report gave the percentage of population by language, according to which speakers of the Nepali language constituted 63.97 percent, the Lepchas and Bhutia languages were spoken by 10.63 percent and 11.23 percent of the total population respectively.

Within a decade, there was a significant rise in the population of Sikkim. This was mainly due to the influx of population from other parts of the country after merger of Sikkim with India. Thus, in 1981 the total population of Sikkim was 3,16,385 and in 1991 it rose to 4,06,457. The 1981 Census Report provided the categorization of population on the basis of 'language mainly spoken in the household'; with Bhutia spoken by 6.8 percent, Lepcha by 7 percent, Limbu by 5 percent, Sherpa by 3.4 percent, Tibetan by 1.34 percent and Nepali by 61 percent of the total population (Census Report Sikkim, 1981,1991) (9) .

In terms of density of population the East District is the most populated with 43.90 percent of the population residing in this district, followed by the South District (24.26 percent), the West District (24.15 percent) and the North District(7.69 percent). Although the North District represents 59.56 percent of the total area of Sikkim, two-third of the region is covered either with perpetual snow or thick forest. It is the most thinly populated district of the state, with only 7 persons per sq. km as against 187 persons per sq.km in the East District.

Districtwise general information on (1991) (10) census is given at Table No.2.5

**TABLE NO 2.5****DISTRICTWISE GENERAL INFORMATION : 1991 CENSUS**

SL No.	Item	Unit	North	East	South	West	State
1.	District	No	1	1	1	1	4
2.	Sub-division	No	2	2	2	2	8
3.	Zila Panchayat Wards	No	20	27	23	22	92
4.	Gram Panchayat Wards	No	98	269	243	263	873
5.	Gram Panchayat Units	No	20	48	42	49	159
6.	Revenue Blocks(Vill)	No	53	134	145	121	453
7.	Towns	No	1	3	2	2	8
8.	Area	Sq.km	4226	954	750	1166	7096
		%	59.56	13.44	10.57	16.43	100
9.	Density	per sq km	7	187	131	84	57
10.	Population	Nos	31240	178452	98604	98161	406457
		%	7.69	43.90	24.26	24.15	100
11.	Urban Population	%	20	7.84	63	43	9.10
12.	Rural Population	%	7.49	36.06	23.63	23.72	90.90
13.	Scheduled Tribe Population	No	17301	37632	16671	19297	90901
		%	19.03	41.40	18.34	21.23	22.36
14.	Scheduled Caste Population	No	1111	12482	5564	4927	24084
		%	4.61	51.83	23.10	20.46	5.93
15.	Decennial Population Growth	1981-1991	18.09	28.60	29.20	31.14	28.47
16.	Sex Ratio	F/000 Males	828	859	892	915	878
17.	Literacy	%	53.55	65.13	54.08	45.62	56.94
18.	Households	No	6658	34241	17924	17506	76329
		%	8.72	44.86	23.48	22.93	100
19.	Total Main Workers	%	42.9	37.14	41.8	44.32	40.45
20.	Marginal Workers	%	1.23	1.37	0.98	0.54	1.06
21.	Non Workers	%	55.87	61.49	57.22	55.14	58.49

### Dress

Lepcha . The traditional dress of the Lepcha men is called *gada* . It consists of a long, beautiful striped cloth loosely worn down to the knee leaving one or both arms free. The trousers which reaches up to the calf only are called the *phomu*. Women wear the *dumdyan*, a full length robe, held at the shoulders by a pair of brooches and fastened at the waist by a girdle of silver chains or simple hand-woven strip of cloth, known as the *namrek*. Over the *dumdyan* a loose coat called the *pago* is worn. A scarf (*thorough*) is tied round the head. Shoes for both men and women are called *hlom* (pronounced *lhom*)(Sanchita Ghatak, 1993) (11).

Bhutia. The Bhutia costume for both sexes is called the *kho* . The *kho* worn by the male is called the *po-kho*, whereas that worn by a woman is called the *mo-kho*. Underneath the *kho*, a man wears a double breasted, high necked shirt, the *tsen-ta-ti*, and pants (*gya-ton*). A woman wears a long, loose-sleeved blouse (*honju*) underneath the *kho*. A married woman ties a striped apron (*pangden*) over the *kho* at the waist. The quality of the clothes worn both by men and women vary according to the economic status of the person ranging from simple cotton to Chinese brocade and silk. The *kho* is held at the waist by a long piece of cloth (*keru*).

Nepali. The traditional costume of Nepali men consists of the *daura* and the *suruwal*. The *daura* is a knee-length double-breasted shirt, fastened at four points across the body by a string of cloth called the *tuna*; the trousers is called the *suruwal*. A sleeveless coat over the *daura* and a cap called the *birkhe topi* complete a Nepali man's dress. Nepali women wear the *choubandi*, a double-breasted blouse held at four points across the body by the *tuna* and the *phariya* or the *gunui*, which is worn at the waist and reaches down to the ankle with tiny pleats in front. It is held at the waist by a long strip of cotton cloth (*patuka*). They cover the head with a triangular or rectangular piece of cloth (*majetro*) and tie a cloth around the bust down to the hips (*hembari*).

### Jewellery

Lepcha. Lepcha men do not wear any jewellery except amulets given by the monks. The women are very fond of wearing colourful necklaces made of turquoise,

coral, amber or simple glass beads (*lyak*), ear rings (*nay-kong*), bangles(*kaghu*) or rings (*kakyup*).

Bhutia. Bhutia women wear necklaces of various designs called the *khou* the *ka-chung*, the *zuri*. The *chyap-chyap* is worn with the *khou* as a brooch. The Bhutia names for different items of ornaments are the *len-dab*(ear ring), the *zuku*(ring), the *deu*(bracelet). All the ornaments are made of gold, studded with various precious stones like *yeu*, *dhow* and *zi*. The *zi* is considered to be the most sacred and precious stone(SRIT Bulletin, 9189) (12).

Nepali. Nepali women wear mostly gold and silver ornaments. The traditional ornaments are ear rings (*chyaptesun*, *godavari*), necklaces (*tilhari kantha*), and bracelets(*chura*), nose rings (*mundri*, *dungri bulaki*) and anklets (*kalli*). *Kallis* are made of silver. The different names for the ornaments represent the different designs of the items. At the time of marriage the bridegroom ties around the neck of the bride strings of green tiny beads (*potey*), that serve for a sign for the married Nepali woman. Nepali men do not wear any jewellery except the ring (*aunthi*)(Subba, 1989) (13).

### Agricultural implements

In Sikkim people are yet to make use of improved and mechanized implements in agriculture mainly because of the nature of the terrain. All the three communities use identical implements like the wooden plough, commonly known as the *halo*, which is widely used. The *kanta*, a spade-like tool with sharp teeth, is used for digging the soil. Other tools widely used include the sickle, called the *hasiyan* by the Nepalis and the *nga-tso* by the Bhutias; the sickle with a row of sharp teeth called the *kachiyen* by the Nepalis and the *nga-ra-tso* by the Bhutias, the bullock-driven ground -leveller, called the *dante* by the Nepalis and *chhyi-ri* by the Bhutias. For cutting wood and splitting bamboos or for such other work, Nepalis use the *khukri* whereas the Bhutias and the Lepchas use the *bentok* and the *bamphok* respectively (K.S. Singh, 1993) (14).

### Food

The staple food of the Lepchas is rice. These days they sometimes take *chapatis* too. They also take roasted or boiled maize. They are non-vegetarian and eat all kinds of meat, fish and birds. It is said that earlier they would take the meat of monkeys and

snakes. The present generation tends to keep away from these. They eat various types of tubers and vegetables. One of the most important items in the Lepcha diet is *chi*, home-brewed millet alcohol. A Lepcha who does not drink the *chi* is hard to find. (Foning, 1987) (15).

The traditional staple food of the Bhutias includes the *tsampa*, the *thukpa* and the *momo*. These days they also take rice and sometimes *chapatis*. They are non-vegetarian and eat egg, fish, chicken, mutton, pork and beef and sometimes buffalo meat. Dried beef is a delicacy for them. They also eat various types of tubers and vegetables. During festivals they make several kinds of sweets and salted refreshments called the *khabse* and the *fongui amcho*. They are very fond of drinking the home-brewed alcohol called *chhang* (called *chi* by the Lepchas and *janr* or *rakshi* by the Nepalese) (Sanchita Ghatak, 1993) (16).

The staple diet of the Nepalis is rice and pulses and sometimes *chapatis*, or the oil-fried small *chapatis (puri)*. The various groups of Nepalis have different dietary pattern with regard to meat and drinking alcohol. The Bahuns or Brahmans are mostly vegetarian and do not drink alcohol; instead they eat different type of tubers, vegetables and are very fond of drinking milk and curd. People of the Chhettri, Thakuri and Majhi groups are non-vegetarian but eat only egg, fish, chicken and mutton, and do not eat pork and beef. The Yakhas, Damais, Mangars, Gurungs, Kamis, Sarkis and Bhujels take beef and buffalo. The Newars eat egg, fish, chicken, mutton and buffalo but do not eat pork and beef whereas the Kagates, Limbus Sherpas, Tamangs take egg, fish, chicken, mutton, pork, beef and sometimes buffalo. Some of the sub-castes among the Tamangs and Gurungs do not eat pork or beef. All the communities mentioned above take tubers and vegetables which are either locally grown or bought at the market. Except the Brahmans, all other groups among the Nepalese take home-brewed millet or rice alcohol (*janr, rakshi*). Among the Nepali Hindus, there are followers of various sects like Kabir Panthis, Pranamis, Raidas. These people are strictly vegetarian and some do not take even garlic and onion.

The festival delicacies of the Nepalis include *chel roti, phuraulo*. On the Maghe Sankranti day, various kinds of boiled tubers and roots and *phuraulo* are taken, and *chel*

*roti* is made especially during Tihar or for a marriage or any other ceremony except the death ceremony. (Subba, 1989) (17).

JP Tamang (1998) (18) explains that more than seventeen varieties of indigenous fermented foods are traditionally prepared and consumed by people at house hold level for centuries in Sikkim as shown in Table No2.6

**TABLE NO 2.6.**

**INDIGENOUS FERMENTED FOODS OF THE SIKKIM HIMALAYA**

Fermented food	Substrate	Nature and use
<b>Common fermented foods</b>		
Kinema	Soybean	Cooked soybeans showing stickyness with Typical flavour, side dish
Gundruk	Leafy vegetable	Dried, sour-acidic taste; soup, pickle
Sinki	Radish root	- do -
Selroti	Rice/wheat flour	Pretzel-like, deep fried; confectionary bread
Dahi	Milk	Thick gel; savory
Mohi	Milk	Butter-milk; non-alcoholic drink
Chhurpi	Milk	Soft-mass is used for curry, pickle Hard mass Is consumed as masticatory
Sukako masu	Mutton/beef/pork/yak	Smoked meat; curry
<b>Common fermented beverages</b>		
Marchaa	Rice, wild herbs, spices	Solid, dry, white cake-like starter culture to Ferment beverage
Kodo Jaanr	Finger millet	Midly alcoholic, slightly acidic-sweet Beverage
Bhaate Jaanr	Rice	- do -
Makai jaanr	Maize	- do -
Raksi	Starchy substrate	Distilled alcoholic drink
<b>Lesser-known fermented foods</b>		
Masauryra	Black gram	Ball-like hollow; spicy condiment
Mesu	Bamboo shoot	Sour-acidic flavour ; pickle
Khalpi	Cucumber	- do -
Somar	Milk	Soft-mass paste, brownish colour with Flavour condimen

## Religion

### Religious Groups

Two important religions professed by the people of Sikkim are Mahayana Buddhism and Hinduism.

The introduction of Buddhism in Sikkim coincides with the establishment of a political institution in Sikkim in the seventeenth century. The three monks who had come to Sikkim from Tibet started propagating the religion and constructing monasteries. Mahayana Buddhism was the state religion till the abolition of the system of hereditary monarchy in 1975.

The two sects of Mahayana Buddhism in which the majority of the Buddhists in Sikkim are organised are the Nyingmapa and the Karma-Kadgupa.

A majority of Bhutias and the Lepchas are Buddhists. There are some Buddhists among the Nepalese like the Tamangs and Sherpas, but the majority of them are Hindus, worshipping various Hindu gods and goddesses. One of the striking features of the religious practices of the Nepalese is the worship of the family diety(kul-Devata). Those who worship the Kul-Devata have a separate altar to which only close family relations have access. Generally the rites and rituals are performed by priests of the same caste.(Subba, 1989)(19).

Besides of Buddhists and Hindus, there are a few Christians, Muslims, Sikhs and Jains. The classification of population on the basis of religion (1981 Census) is as follows :-

Religion	Percentage to Total Population
Buddhist	28.71
Hindu	67.25
Christian	2.22
Muslim	1.03
Sikh	0.10
Jain	0.03

### Religious Institutions

Monasteries. There are about seventy seven monasteries in Sikkim. The oldest monastery at Dubdi in Western Sikkim was constructed soon after the consecration of Phuntshog Namgyal. The monasteries of Tashiding, Rinchangpong, Sangacholling and Pemayangtse were constructed in the latter half of the seventeenth century or in the early eighteenth century. A few important monasteries of the Nyingmapa sect in Sikkim are Pemayangtse, Tashiding, Sangacholling, Enchey and Tsuk-la-Khang. (D.P. Boot, 1996)(20).

The first monastery of Karma-Kadgupa was constructed in 1730 at Ralang in South Sikkim by the fourth Chogyal of Sikkim, Gyurmed Namgyal, in pursuance of a promise given by him to the twelfth incarnation of Gyalwa Karmapa at Tsurphung monastery in Tibet. Other important monasteries of this sect are at Phodong and Rumtek. Rumtek is the present seat of the current 17<sup>th</sup> Karmapa. (RR Dhamala, 1993)(21).

Temple. The Thakurbari at Gangtok was established in 1935. Besides this there are about fifty temples scattered all over the state. There are four churches at Gangtok and six others in other parts of Sikkim. The lone mosque in Sikkim is located at Gangtok. (K.S. Singh, 1993) (22).

### Languages

The three major languages spoken in Sikkim are Nepali, Bhutia and Lepcha. Due to the overwhelming presence of the Nepalese, Nepali has since long become the *lingua franca* of the state.

The Bhutia and Lepcha languages belong to the Tibeto-Burman group, while Nepali is an Indo-Aryan language.

There are four official languages of the state, viz Lepcha, Bhutia, Nepali and Limbu, which are taught in the schools also.

The 1981 Census gave the following figures on the basis of language spoken in the household :-

Bhutia	Lepcha	Limbu	Nepali	Sherpa
21,548	22,391	17,922	192,891	10,726

Besides these Languages, the several dialects prevalent within the different Nepali castes include Rai, Tamang, Gurung, Mangar, Newar etc. However, these dialects are very rarely spoken even within the same community. Speakers of these dialects usually speak the standard Nepali.

There are also speakers of many other languages like Hindi, English, Punjabi, Bengali, Tamil, Telugu, Malayalam, Manipuri and Urdu.

### Settlement Pattern

Ever since Sikkim was exposed to outside influence it has been the meeting place of two diverse cultures brought in by the two immigrant communities, *viz.* The Bhutias and the Nepalese. While the Bhutias brought with them a part of Tibetan cultural life including the language, religion and an economic system which was a combination of pastoralism and semi-settled agriculture, the Nepalese brought with them a part of Nepal's cultural life including the Nepali language, Hinduism and settled cultivation especially terraced cultivation.

While the cultural influence of the Bhutias on the Lepchas, especially the conversion of the Lepchas into the fold of Buddhism, prevailed, the Nepalese retained a distinct identity. Initially, the Bhutias coming from the cold and dry climate of Tibet were resistant to the warmer regions. As a result, their habitation came to be concentrated in the higher regions. Consequently the Lepchas retreated to the remote valleys and forest-clad mountains. The Nepalese began to occupy the warmer regions. The Limbus were mostly scattered in the Western part of Sikkim. In course of time, however, the settlement pattern became more dispersed. At present, all communities are scattered over all parts of Sikkim. The two pockets of Sikkim where one can find the dominance of one ethnic group are Dzongu and the two valleys of Lachen and Lachung of North Sikkim. (Sengupta, 1985) (23).

The Dzongu area is situated on the Western side of the river Tista in North Sikkim. It consists of thirteen revenue blocks. In order to preserve and protect the Lepcha culture, it was declared a Lepcha reserve. There is a legal restriction on other communities trying to settle in Dzongu. Still, barring the Sakyong and Pentung blocks, all the other blocks have some proportion of households belonging to other communities. The total population of Dzongu (1981 Census) is 7745, of which 56 percent are Lepchas.

The Lepchas are primarily cultivators, with 95 percent of the households engaged in agriculture.

The two valleys of Lachen and Lachung in Northern Sikkim are inhabited by Bhutias, who call themselves People of Lachen (*Lachenpa*) and people of Lachung (*Lachungpa*). According to the 1981 Census, there were 234 households with a population of 1508.

The people of these valleys are essentially herdsmen and traders. Till the closure of the border with Tibet, they had been mainly engaged in trans-border trade. The people are now mostly engaged in agriculture including horticulture.

### House Pattern

Most of the houses of the Bhutias and the Lepchas are two-storeyed rectangular structures. The ground floor is partially enclosed where domestic animals especially cattle are kept. The houses are made of bamboo splits plastered with mud. The roof is thatched with reed, straw and bamboo. The Nepalese usually build their house right on the ground as they keep their domestic animals in a different shelter. They also use bamboo splits and mud. Some of the houses are also made in wooden planks. Presently corrugated tin roofs are replacing the thatched roofs of the Bhutia, Lepcha and Nepali houses. In most of the urban and semi-urban areas R.C.C. buildings are a common sight. Most of the houses consist of two or more than two rooms depending upon the economic condition of the family. In every traditional house there is a separate room for an altar which also serves as a store room for the grains. (Bhasin, 1995) (24).

### Major Festivals of Sikkim

The festivals of Sikkim can be said to belong to two cultural streams based on religion, the Nepali culture and the Bhutia-Lepcha culture.

Two important festivals of the Nepalese, the Dasain and the Tihar, are known as the Dussehra and Diwali respectively in other parts of India.

Dasain is celebrated during the months of September-October (Ashwin in the Nepali calendar). During Dasain, the goddess Durga is worshipped, whereas Vijaya Dashami is celebrated with much merry-making. On this day, elders of the family i.e. the grand-parents, parents and other, put *tika* (a mixture of curd and rice, known as *achata* and vermillion) on the foreheads of the younger people with their blessings. Coloured

*tika* is not put on the forehead of a widow, instead it should be of white colour. The *tika* celebration continues for five more days. On the first day is the *Kag Tihar* which literally means 'the festival of the crow (*kag*). On this day delicacies are prepared and given to the crow. The second day is the *Kukoor Tihar*. On this, special attention is given to the dogs. Flower garlands are put around the necks of dogs who are given special food, consisting of meat and cooked rice. The third day is the *Gai Tihar*. On this day cows are worshipped and given special food. On this evening each household worships the goddess Lakshmi. The houses are decorated with marigold garlands and rows of lights are lit in the evening. After this, groups of girls visit the houses and sing the special song known as the *bhailo*. Such singing groups are called the *bhailinis*. The next day is the celebration of *Goru(ox) Tihar*, and on the following day is the *Bhai-tika*. On this day, a sister (*cheli*) puts a multicoloured *tika*, usually of three or four colours, on the forehead of her brother (*maiti*). On the two days of *Goru Tihar* and *Bhai-tika* groups of boys visit houses singing traditional songs (*dewsi*) normally accompanied on the drum (*madal*). (Subba, 1989) (25).

Another important festival of the Nepalese is the Maghe Sankranti which falls usually in the middle of January. On this occasion prayers are offered at the confluence of rivers and people take a dip in the river. The special food items taken on the day comprise various types of boiled roots and tubers and *phuraulo*.

All the Hindu Nepalese, irrespective of caste observe these festivals. Interestingly, the Tamangs, who are Buddhist Nepalese, observe these festivals with equal fervour.

The important festivals of the Buddhists of Sikkim are the Tibetan New Year, the Sagadawa, the Pang-Lhabso, the Losoong, and the Lhabab-Duchen.

The Tibetan New Year which is known as the Lossar marks the preaching of Dharma by Lord Buddha to the devil, and is usually celebrated in the month of February-March for seven days with much merry-making.

Sagadawa is an auspicious month for the Sikkimese Buddhists. Prayers are held throughout the month in various monasteries. On the full moon of the fourth month of the Tibetan calendar is the main celebration. This religious festival is considered the

most sacred, because it signifies the birth of Lord Buddha, his enlightenment and attainment of *Nirvana*. A colourful procession of monks with geylings and rabdung go around the major thoroughfares of the town carrying the Kangyur texts on their heads.

Pang-Lhabsol is a festival to worship Mt. Khanchendzonga, the guardian deity of Sikkim. It is held on the fifteenth day of the seventh month of the Tibetan calendar.

Losoong, called Namsong by the Lepchas, is also known as Sonam Losoong. It is essentially the festival of the harvest. On this day, newly harvested paddy and fruits are offered to the gods. It is celebrated on the first four days of the eleventh month of the Tibetan calendar.

Lhabab-Duchen is another important festival of the Buddhists of Sikkim, celebrating the descent of Lord Buddha from the thirty-third heaven. (SRIT Bulletin No3, 1993) (26).

## Socio-Political Institutions

### Social Organization

The social organization of the Lepchas, Bhutias and Nepalese present three distinct patterns. While the kinship and clan association give a Lepcha a sense of social and territorial belonging, this is absolutely absent in the case of the Bhutia. A Bhutia seldom uses his clan name as he does not possess a strict social organization of clan. Many Bhutia clan names are associated with a locality but there is no sense of a genealogical identity involved. They do not regard the clan members as descendants from a common ancestor as in the case of the Lepcha.

In the Nepali society the caste names do not provide any sense of territorial belonging. It is also characterized by caste hierarchy and the practice of untouchability, which however is now on the wane. The chief function of caste is in the regulation of marriage. The Lepchas did not have any social organization. In the past, the *mandal* who was the collector of revenue used to function as the advisor to the villagers in case of any necessity. The post of *mandal* was hereditary and still continues to be so. However, of late, the constitution of statutory panchayats has considerably minimized the social function of a *mandal*.

The *kyi-dug* constitutes the social organization of the Bhutias. Generally the *kyi-dug* is identified with one territorial clan, like Thomorva, the Ardowa or the Khampa. The main function of the *kyi-dug* is to help its clan members at times of need; for instance, if any death occurs, every family is expected to send a member to help in cremation. If a family fails to do so, the *kyi-dug* would impose a fine on the erring member. Its office-bearers are elected by the members from amongst themselves.

The Lachenpa and Lachungpa of North Sikkim have the *Zumsha* organisation in existence from very early time; JC White (1909) (27) described the *Zumsha* as being 'very unusual and almost a communistic government', where everything from carrying of load for visiting government officers to allotment of land to different members was decided upon by the whole population of the village. The village headman (*pipon*) was elected by adult members drawn from each of the family for a term of two years. Besides the *Zumsha*, there was another body of village elders called the *Gyemmi*, for aiding and advising the *pipon* in functions involving the community as a whole. The functioning of the *Zumsha* in these two villages proved to be so useful that the Government of Sikkim allowed it to function as a rural self government unit when the Sikkim Panchayat Act 1965, and later the Sikkim Panchayat Act 1982 were enacted.

Among the Nepalese there are various caste organisations generally known as *Samaj*, like the *Tamang Samaj*, the *Rai Samaj*, the *Kami Samaj* etc. These councils function as agencies of social control. Sikkim was under a system of hereditary monarchy till 1975. It was brought under the British protectorateship after the Tumlong Treaty of 1861. The country was administered by the British political officer with the help of a council consisting of influential *Kazis* and representative of the monastery. The full authority of the Maharaja was restored in 1917. (Sengupta, 1985) (28).

State Council. The first state council was constituted in 1953. It consisted of a president nominated and appointed by the Maharaja. Twelve elected members of whom six belonged to the Lepcha-Bhutia and six of the Nepali communities, and five members nominated by the Maharaja. In 1958, the number of council members was raised to twenty with the introduction of one general and one reserved (*sangha*) seat each and an addition of one more nominated member. In 1966 the number was raised to twenty-four

with an addition to the number of Bhutia-Lepcha and Nepali seats and the introduction of a scheduled caste seat and a Tsong seat.

Executive Council . According to the Maharaja's proclamation of 23 March 1953 the Executive Council was constituted consisting of the *Dewan*: 'by virtue of the office which he holds under the Maharaja' and 'such members of elected members of the state council as may be appointed by the Maharaja from time to time'. The members of the Executive Council were to hold office 'during the Maharaja's pleasure', and were to be 'responsible to him for the executive and administrative functions of the Government'.

The departments placed under the Executive Council were education public health excise, press and publicity, transport, bazars, forests and public works.

State Legislative Assembly . Following the agitation of 1973 there was some change in the structure of the political institutions of Sikkim. Under the May agreement (1973) election to the Assembly was to be held under the aegis of the Chief Election Commissioner of India. The new Legislative Assembly consisted of 32 seats including two reserved seats, one each for the scheduled castes and the *Sangha*. This maintained the parity between the two communities.

In 1978, a presidential ordinance laid down a new formula for the distribution of seats in the Assembly, abolishing the party formula; seats were now reserved for the Bhutia, Lepcha, *Sangha* and scheduled castes. This distribution of seats in the Assembly is now as follows (Sengupta, 1985) (29) :-

Community	Number of Seats
Bhutia-Lepcha	12
Scheduled Castes	2
Sangha	1
General	17
Total	32

## Economic Development

### Five-Year Plans

By the provisions of the Indo-Sikkim Treaty (1950) the Government of India had taken special responsibility in initiating planned economic development in the state. Accordingly, with financial assistance from India, a Seven-Year plan (1954-1961) was undertaken with a total outlay of Rs 324.00 lakhs, followed by three Five-Year Plans from 1961 to 1976. The total outlay for these plans were Rs 641.00 lakhs for 1961-66, Rs 972.00 lakhs for 1966-71 and Rs 1875.00 lakhs for 1971-76 plan periods. In these plans special emphasis was laid on the development of infrastructures like road and communication for which about 48 percent of the total outlay was allocated. Agricultural development did not receive much attention for which only 16 percent was allocated during the second and fourth plans. In the third plan (1966-71) 44 percent of the total outlay was allocated to the agriculture sector. (Economic and Statistic Bureau Sikkim, 1992-93) (30). In the post-merger period there was a shift in the thrust of the plan, and agricultural development was given priority in the state development plans. During the fifth plan period the agriculture department was able to 'develop a basic infrastructure including establishment of Regional Centres, Regional Sub-Centres, VLW. Circles and specialized farms. Attention was also given to the development of a cadre of technically qualified personnel with a view to create the necessary environment for implementing plan programmes in the agricultural sector'.

Environment was given its due in 8<sup>th</sup> Five year plan, outlay and expenditure of which is given at Table No 2.7 (Stats Bureau Sikkim, 1998) (31) :-

### Development Activities

Agriculture. The Department of Agriculture and Animal Husbandry was established in 1954 with the initiation of the Seven-Year Plan. The activities of the department increased considerably after 1975, with notable developments like the establishment of the nine regional centres, five regional sub-centres and establishment of one hundred V.L.W. circles in order to help the farmers adopt developed farming techniques.

**TABLE NO 2.7****EIGHTH FYP (1992-1997) : OUTLAY AND EXPENDITURE**

Rs in Lakh				
SI No	MAJOR HEAD/MINOR HEAD OF DEVELOPMENT	Original Outlay	Actual Expenditure	Percentage Distribution
I.	AGRI & ALLIED SERVICES	7350	12881	16.59
II	RURAL DEVELOPMENT	1280	2865.97	3.69
III	IRRIGATION & FLOOD CONTROL	1300	1426.62	1.84
IV	ENERGY	13450	13407.17	17.27
V	INDUSTRY & MINERALS	2080	3053.74	3.93
VI	TRANSPORT	9000	10013.03	12.90
VII	COMMUNICATIONS	-	-	-
IX	SCIENCE, TECHNOLOGY & ENVIRONMENT	400	404.68	0.52
X	GENERAL ECONOMIC SERVICES	1100	1256.34	1.62
XI	SOCIAL SERVICES	-	-	-
	General Education	5500	8633.32	11.12
	Technical Education	280	12.31	0.02
	Sports and Youth service	280	260.74	0.34
	Art & Culture	330	393.94	0.51
	Medical and Public Health	5220	7060.95	9.10
	Water Supply and Sanitation	3000	6287.26	8.10
	Housing (inc. Police Housing )	550	3935.99	5.07
	Urban Dev.(incl State)	450	1023.66	1.32
	Information and Publicity	250	287.46	0.37
	Welfare of SC/ST & Other B Classes	350	680.65	0.88
	Labour & Labour Welfare	30	27.47	0.04
	Social Security & Welfare	150	495.39	0.64
	Women & Child Welfare Nutrition	400	873.29	1.12
	Total : XI	16790	29972.43	38.61
	XII GENERAL SERVICES	1250	2347.13	3.02
	GRAND TOTAL	54000	77628.11	100.00
	Non-Plan Deficit	1000		

Although 80 percent of the total population are dependent on agriculture, only 15.69 percent of the total geographical area is put to agricultural use. Area under different land use in Sikkim as per agriculture Census is given in Tables 2.8 to 2.11:-

With this acute shortage of cultivable land in Sikkim, the aim of the agriculture department has been to increase the productivity of land, rather than bringing more land under cultivation. Its strategy has been to replace traditional farming with improved techniques like the use of improved seeds, fertilizers, effective plant protection and proper storage of farm produce. Efforts are being made to introduce multiple cropping so that the farmers make best use of their resources like land, man power and natural sources.

The main crops grown in Sikkim are maize, rice, millet, wheat, barley, buckwheat etc. The most important cash crop is cardamom and the cash fruit is orange. The department is given special attention to promote the cultivation of these two items.

Industry. Before 1975 there were only a few industries in Sikkim, the most notable ones being the Food Preservation Factory, the Sikkim Distilleries and the Sikkim Jewels. Before 1974 the industrial activities were looked after by the Trade, Industries and Commerce Department. (Manas Das Gupta, 1992) (32).

Soon after 1975 all the four districts were declared industrially backward and a Directorate of Industry was established in 1976 to take over all responsibility of promotion and development of industries in the state.

Most of the industries that exist in Sikkim are either small scale or medium scale. About seventy-two registered units are functioning in the small scale sector. Special attention has been given to promote this sector of industry.

Industrial development is mainly state-sponsored and an emerging class of entrepreneurs are being given assistance by the government. The establishment of the Sikkim Industrial Development and Investment Corporation in 1977 was a step towards this direction.

**TABLE NO 2.8****AGRICULTURE****AREA UNDER DIFFERENT LAND USE IN SIKKIM AS PER AGRICULTURE  
CENSUS**

Sl No.	Classifications	Total Area in Hectares		
		1976-77	1980-81	1990-91
<b><u>LAND UNDER OPERATIONAL HOLDINGS</u></b>				
1.	Net Area sown	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 un-cultivated area Excluding fallow land	4,925 (0.69)	4,560 (0.64)	10,830 (1.53)
4.	Fallow otherthan Current Fallow	944 (0.13)	9,474 (1.34)	9,204 (1.30)
5.	Culturable Waste Land	1153 (0.16)	681 (0.10)	9,807 (1.38)
6.	Land not available for Cultivation	6613 (0.93)	11,604 (1.64)	14,300 (2.02)
(A)	<b>TOTAL OPERATED LAND</b>	<b>79062</b>	<b>1,09,068</b>	<b>1,11,302</b>
	% To total Geog.Area	(11.14)	(15.37)	(15.69)

**LAND UNDER NON-OPERATIONAL HOLDINGS**

1.	Permanent pastures & Grazing Land incl culturable waste	87,188	72,937	1,20,299
2.	Land put to non-agricultural use	69,96	85,362	
3.	Barren Land	2,04,01	1,80,250	1,60,000
4.	Land under Miscellaneous Trees and Grovers etc	4,17	5,450	2,98,000
5.	Forest	2,85,21	2,56,533	
(B)	<b>TOTAL UN-OPERATED LAND</b>	<b>6,30,538</b>	<b>6,00,532</b>	<b>5,98,298</b>

Total Geographical Area of Sikkim = (A)+(B) = 709600 hec.

**TABLE NO 2.9****OPERATIONAL HOLDINGS 1990-91 HIGHLIGHTS**

Sl No	Particulars	Operated Area		% to total Geog. Area
		Hectare	%	
1.	Net Area Sown	63,254	56.83	8.91
2.	Area under current Fallow	3,906	3.51	0.55
3.	Net Cultivated Area	67,160	60.34	9.46
4.	Total Uncultivated Land	29,841	26.81	4.24
5.	Land not available for Cultivation	14,301	12.85	2.02
	Total Area	1,11,302	100.00	15.69

**TABLE NO 2.10****OPERATION HOLDINGS BY TYPE: AREA (IN HEC.)**

Sl No	Particulars	1980-81	1990-91	Variation
1.	Individual Holdings	4120	3027	(-)26.52
2.	Joint Holdings	107095	110022	2.73
3.	Total	1973	1279	(-) 35.17
4.	Institutional Holdings	-	-	-
5.	Total	109068	111302	2.05

**TABLE NO 2.11****AVAILABILITY OF LAND PER HEAD IN SIKKIM (IN HEC.)**

Sl No	Type of Land	1971	1981	1991
1.	Net Cultivated Land	0.31	0.27	0.17
2.	Operated Area for Agricultural use	0.38	0.35	0.28
3.	Land for Non-agricultural use	0.33	0.28	0.21
4.	Pasture & Culturable Wasteland	0.4	0.24	0.18
5.	Forest	1.26	0.83	0.65

One important industry that has been drawing the attention of the government is the tea industry, established in 1965. Recently around 370 acres of land have been converted to tea plantation. In order to give a boost to this industry a programme for decentralized cultivation of tea in private lands has been taken up for implementation. Other newly established industries include the Sikkim Flour Mill, Yoksom Breweries, Soap Industry and Denzong Rubber.

Education. There are at present 1559 schools in Sikkim and 1,36,976 school-going children. The literacy rate among the males stands at 65.7 percent while 46.76 percent of the women are literate. (Economic and Statistics Bureau, 1999) (33).

Health. Health facilities have been expanded to cover the entire population. There are five hospitals, 24 primary health centres, 147 primary health sub-centres. The rate of infant mortality is rapidly declining, which stands at 46 per thousand births at present. One Referral Centre has recently come up in Gangtok having all modern medical facilities.

Social welfare and Nutrition programmes cover a large segment of the population. A massive programme to ensure availability of drinking water in the rural areas has been implemented and out of 440 villages 168 are fully covered while another 200 villages are partially covered. (Economic Statistics Bureau, 1998) (34).

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