

APPENDICE

APPENDX-I

INTRODUCTION TO THE STUDY AREA: DARJEELING HILL AREAS

1.1 LOCATION AND BOUNDARY

There are four subdivisions in the area of the Darjeeling district. Of which one of the subdivision falls under plain area (Siliguri have been excluded, from the study. The rest of the three subdivisions viz. Darjeeling, Kurseong and Kalimpong form the universe of the study. These three subdivisions comprises of following eight blocks namely Pulbazar-Darjeeling,, Sukhia-Jorebunglow, and Rangli Rangliot in Darjeeling subdivision, Mirik and Kurseong in Kurseong Subdivision and Kalimpong-I, Kalimpong-II and Gorubathan in Kalimpong subdivision.

Siliguri has been excluded because it has separate entity and that it falls out of Hill development Programmed. Beside with the formation of the Darjeeling Gorkha Hill Council in 1986 there has been much bifurcation of developmental programme.

The hill area of the Darjeeling covers an area of 2417.25 Sq.Km. It accounts for 2.72% of the total area of the state of West Bengal. The Hill area lies between 26⁰ 31' and 27⁰13' north latitude and between 87⁰59' and 88⁰ 33'. East longitude.. It is bounded by Sikkim in the North, Bhutan on the East, Nepal on the West, Dist of Jalpaiguri and Siliguri subdivision in the South

1.2 BRIEF HISTORY OF THE DARJEELING

The history of Darjeeling hill areas begins with the acquisition of the hilly tract, measuring 138 sq. miles comprising areas from Pankhabari to Badamtam, for setting up health resorts by British for its employees from the Raja of Sikkim in 1835. The District acquired the present dimension in 1866 as a result of wars with Sikkim and Bhutan between the period 1850 and 1866

Origin of Name: The name Darjeeling is a corruption of Dorji, the precious stone or ecclesiastical sceptre, which is emblematic of the thunderbolt of Sekhra (Indra) and a 'ling' to denote Place. It means therefore the place of the Dorji, the mystic

thunderbolt of the Lamaist region, this being the name by which the Buddhist monastery which once stood on observatory hill was formerly known.

1.3 NATURAL RESOURCE BASE

1.3.1 Physical Features:

The physiographic division of the Darjeeling is well marked with the tremendous variation in the range of altitude (Fig.1). The Himalayan range has been divided in to three zones the greater of snow-capped mountain, the lower or outer Himalayas and the comparatively low hills forming a sub-Himalayan zone. In Darjeeling, it consists of a portion of the outlying hills of the lower Himalayas and a stretch of the territory lying along the base of the hills known as the Terai. The Terai is 300ft above sea level but there are parts of hills that are 12,000 feet high. The greater part of the Terai region being alternate beds of the sands, gravel and boulders brought down from the mountain. North of the Terai, the Himalayas stand out in a succession of bold spurs. The hill portion is a confused labyrinth of ridges and narrow valleys densely covered with vegetal cover.

The Singalila ridge is the most interesting one in this part of the Himalayas. It commands Nepal on one sides and Sikkim and Darjeeling on the other and it is the water shed of the two great river system, for the stream on its western flank run into the Kosi, an effluent of the Ganges while those on its east runs into the Tista, an effluent of the Brahmaputra. It is the ridge ranging from 10000 to 12000 feet high. The highest peaks of which are Sandakphu (11929 ft.) and Phalut (11811 ft) in the boundary where Nepal Darjeeling and Sikkim meets. A number of spurs descend eastward from the main ridge into the Darjeeling territory. These spurs are of great extent, one being 6 miles to 12 miles long and many 2 to 4 miles in length.

South east of the Singalila range four hill ranges radiate from a central point at Ghoom, a saddle 7,372 ft. in elevation situated to the north west of Senchal, once the Ghoom range climbs due west to Simana-Basti where it meets the Singalila range. To the south, the Senchal-Mahaldiram range trends generally southwards towards Kurseong, reaching an elevation of 8,000 to 8,600 ft. in the northern half and about 7.000 ft. towards the south, the highest points being east Senchal (8,600 ft.), Tiger hill

(8,515 ft), and west Senchal (8,163 ft). The third range, Takdah or Tanglu range branches off from the main Senchal ridge below tiger hill at a saddle 3 miles east of Ghoom and then takes a northeasterly direction, sinking gradually from the height of 7,000 ft to 680 ft at the junction of the Great Rangit and Tista rivers. The fourth range the Darjeeling-Jalapahar ranges on which are situated the cantonments of Katak-pahar and Jalapahar.

1.3.2 River System

Innumerable Jhoras, rivers and a few artificial lakes constitute the water resources of the Darjeeling hill area. The Balasan and Mahandi River drain the valley on the southern side of the Singalila ridge. On the West along the India and Nepal Border is drained by Mechi River. The Tista and its tributaries drain the major part of the hill territory excepting the far eastern flank of the hill where the effluent is Jaldhaka, Neora and other that flows south.

i. Tista River: Dominating all the rivers in the hill is the Tista river system. Tista river like many other great rivers of Northern India rises from the glaciers of North Sikkim at an altitude of 21,000 ft. above sea level. After draining Sikkim from Rangpo, it marks the boundary between the Darjeeling hills for some distance until it receives the water of Great Rangit along right bank. It then runs south entirely on the territory of the Darjeeling. Further south it is join by Relli river along left bank and, Reang and Sevoke river along left bank until it leaves Mongpong forest resort and denounces further south into Jalpaiguri Plain. Ultimately flows into Brahmaputra (Megna) in Bangladesh.

ii. Great Rangit River: The great Rangit the chief effluent of the Tista enters Darjeeling hills from the west and forms the part of the northern boundary flowing from west to east till it joins the Tista. Great Rangit rises in the mountain of the west from the Rotang Glaciers.

iii. Raman River: The Raman river, one of the tributary of the Great Rangit takes its rise under the Phalut peak in the Singalila ranges, which forms the western boundary of the Darjeeling district until it falls into the Great r Rangit.

iv. Little Rangit River: The little Rangit takes its rise under Tanglu in the Singalila range on Nepal boarder and flows finally in the north easterly direction till it falls into the Great Rangit.

v. Relli River: The Relli is a tributary of the Tista is most important stream in the tract situated to the east of Tista. It rises in the hills of Kalimpong in the north east of the Darjeeling hills and flows in a wide south westerly course till it joins Tista from left bank.

vi. Rungdung River: The Rungdung rises from the north western flank of Senchal, flows northward past the eastern valley of Darjeeling Sadar and empties itself into the right bank of Great Rangit.

vii Mahandi River: The Mahandi has it source near Mahaldiram to the east of Kurseong. It flows in the south towards Siliguri. The name Mahandi or as it is called Mahananda is a Bengali corruption of Mahaldi, the Lepcha connotation for river.

viii. Balasan River: The Balasan River takes its rise at Lepcha Jagat a few miles to the south west of the Darjeeling town. It flows a southerly course until it enters the Terai and drains into the plain of Siliguri.

ix. Mechi River: The Mechi rises under the Rangbang Spur in the Singalila range on the indo-Nepal frontier. After it enters the Terai, it divide into two branches, near lower Mechi forest and eventually joins the Mahananda river in the Purnea district of Bihar

x. Jaldhaka River: The Jaldhaka River marks the eastern boundary of the District Darjeeling with Bhutan and western Dauris. It flows south into Jalpaiguri plains. The other rivers are Jhulung, Neora, Lish, Chel, and Ghish etc. These rivers rise in the hills of Kalimpong, run south, and denounces in the plains of Jalpaiguri.

1.3.3 Geology and Mineralogy

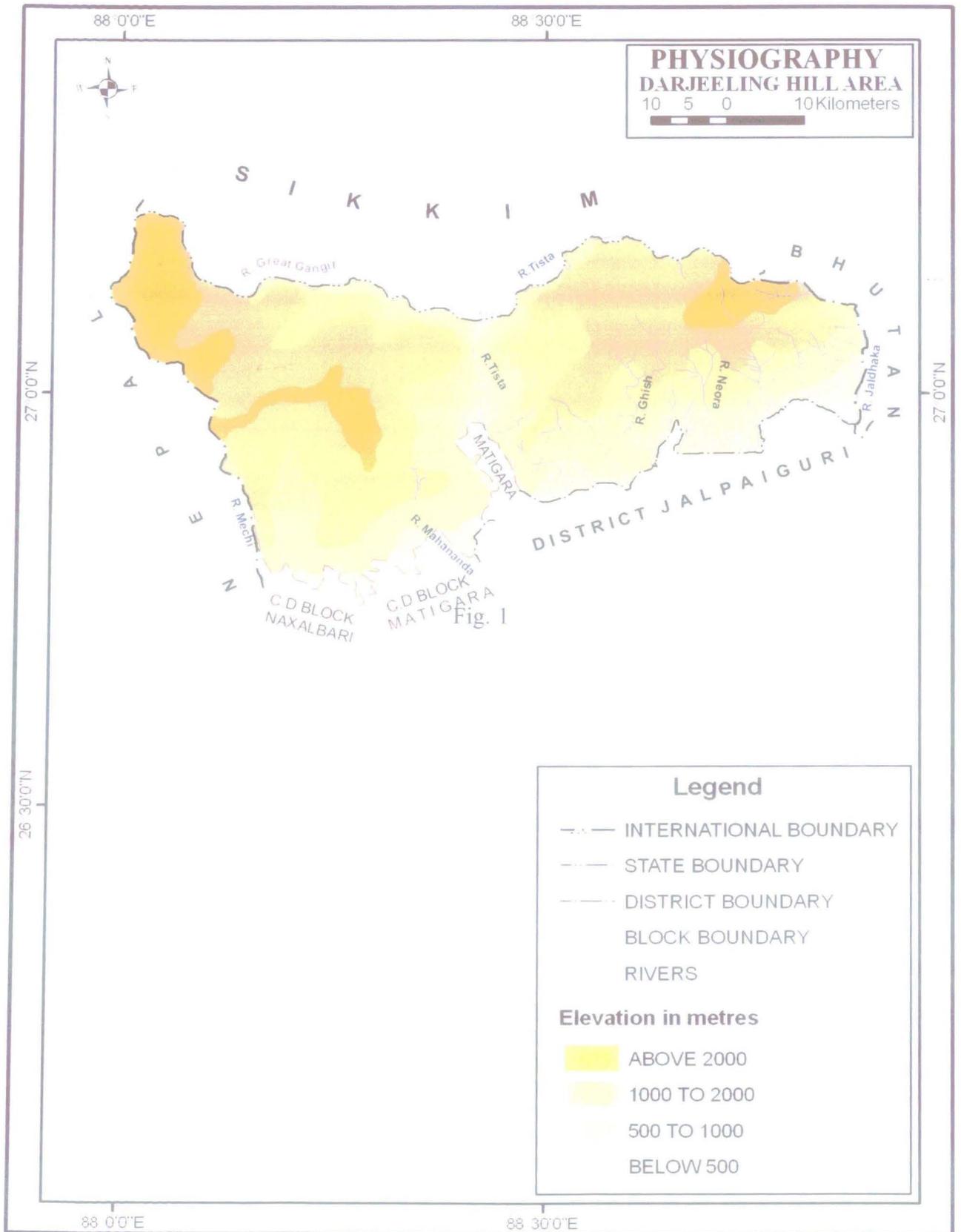
Geologically, Darjeeling hill lies in the less explored region within the eastern Himalaya. However, larger part of Darjeeling Himalaya is composed of granite - gneissic rock. The rock of the Darjeeling hill areas were subdivided into five groups viz. Genesis, the Daling series, the Buxa series, the Gondwana and Tertiary system. The outcrop of these form a series of bands running more or less parallel to the

general trend of the Himalayas and dipping one beneath the other into the hills. The most curious feature of these sub-division is that the younger formation always appear to underlie the older thus Tertiary beds disappear under the Gondwana, the Gondwana under the Buxa and Daling series and the latter under the Gneiss, the original order of superposition having been completely reversed by folding and faulting (Fig.2). The Gneiss varies from a foliated granite rock composed of quartz, feldspar and biotite to more or less pure mica schist, includes partly intrusive granite, and partly metamorphosed beds of sedimentary origin. The Daling series covers a large area in the northern and eastern part of the district. It consists of phyllite, slate and quartzite with some hornblende-schist and subordinate bands of dolomite and crystalline limestone. Copper ore is frequently found disseminated through the slates and schist. The Buxa series, which is largely developed in the western Daur, occurs only at the extreme eastern flank. It consists of slates, quartzite and dolomites; the Gondwana beds crop out near the base of the hills and constitute a narrow band between the Daling and the tertiary running from Pankhabari to Dalingkot. They consist chiefly of sand stone, shale and coal, and these has been intensely crushed and faulted and dip at high angles to the north. The tertiary beds fringe the older rocks continuously from close to the Mechi eastward as far as Dalingkot. They are chiefly composed of soft massive "Pepper and salt" sandstone, containing mica, feldspar and a few subordinate layers of limestone. The sand stone frequently contains lignite, which however has not been found in sufficient quantity to be of economic value.

Coal occurs in the band of Gondwana rocks that run from near Pankhabari to Dalingkot. The beds usually dip at high angles to the north-north west, but are much contorted and faulted and the coal is frequently badly crushed. Copper ore occurs disseminated through the rocks of the Daling series at very large number of places in the hills. There are three possible source of lime in Darjeeling hill viz. the dolomite of the Buxa series, the limestone bands in the tertiary rocks and calcareous turf.

1.3.4 Climate

Because of the complicated relief feature, microclimates are of considerable importance. Climate differs from valley to valley according to the direction of the



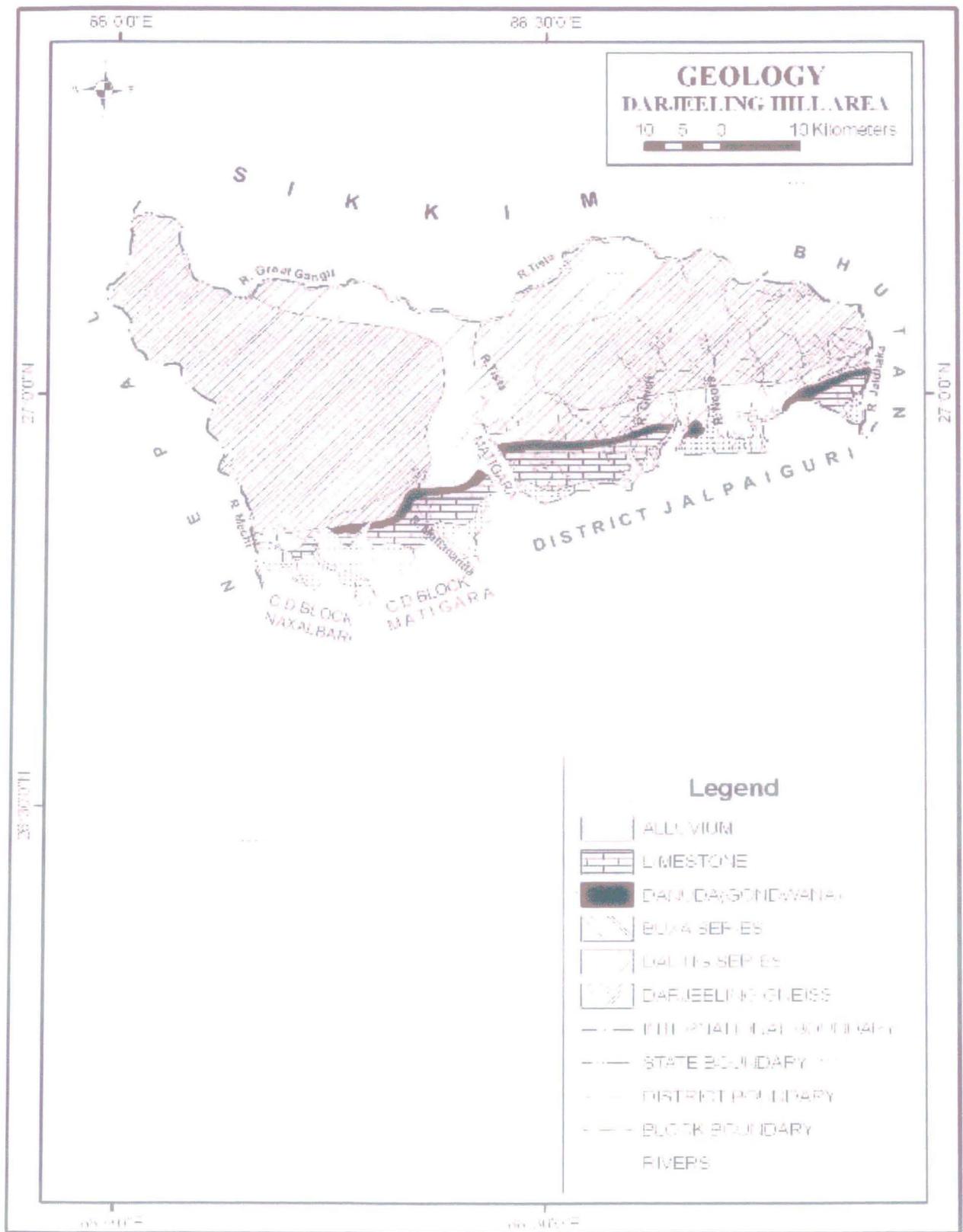


Fig. 2

ridge, degree of slope, exposure to the mountain face and intensity of the forest. Beside there is a sharp variation of the altitude between the valley and the ridges; this results in the variation in the climate from place to place. Moreover the tropical location of the area has much salutation to the south west monsoon regime, this dominate the climate of the hill area of the Darjeeling.

In the hill the winter starts around 15th of November and last till February. Winter are cold, some time muggy, and some time snow falls in the higher ridges while down in the valley is milder during day but experience katabatic wind during night. During occasional cold wave the temperature may go down below 1 degree centigrade in the high hill valley is less affected. A rapid increase in the temperature takes place during March and April owing to the warmer air, which penetrate the valley from plains in the south. This increase in the temperature is characterized by the spring season with cool and bracing season. Around middle of the month of May, the interplay of the clouds may be seen on the sky. This shows the sign for the coming of the monsoon. It is interesting that the pre-monsoon starts with the roaring clouds before the monsoon kicks the Indian coast. This roaring of the cloud is trail by the long season of rain, it some time stretches to September and October. By October, autumn marks with the falling of leaves and the chilly weather.

In general, the Darjeeling receives about 3000mm of rainfall with Temp. 35 to 52 degree F, Kalimpong receives/ gets 2000mm with temperature 46 to 80 degree F. and Kurseong gets about 4000 mm with temperature of 36 to 70 degree F. Ground fogs are often found over 5000 ft of elevation. Weather in the Darjeeling even when apparently most settled cannot be relied on , and cloud and fog may at any time rise from the deep humid valley and hang for the days over the region. Moreover in the valley summer are much hot and humid.

1.3.5 Soil

There is wide differentiation in soils according to different geological condition. In the hills, the greater portion of the underlying rocks consists of the gneiss. The constituents of the gneiss occur in varying proportion and the soil varies in the same relation. The most commonly met with is a rather stiff reddish coloured

loam but its composition varies from almost pure sand to stiff red clay. Part of the area however is composed of rocks of the Daling series consisting of Schist, Slates and Quartzite. Thus, the varieties ranging from Red Clay, Sandy-loams to Grey-brown forest soil are found. The forest soil of the hill is rich in organic matter, which is essentially suitable for cultivation and plantation of various crops in the hill.

In the hill cultivator, recognize only three kind of soil: White, Red and Black. Of these black is the best type, while red can be culture by manuring and the white is the poorest. Beside, the fertility of the soils also depends much on the ecological condition of the area. Moreover, Soil throughout the hill is deficient in lime.

1.3.6 Biotic Resource

(i) **Flora:** Rich Biotic resources of the hill region deserve a special mention. Varied altitude, climate, slope and aspect all are determinant of the different species of the rich flora and fauna. Vegetation from tropical forest, which thrives well in the damp, humid valley bottoms at lower elevation to stunted junipers and rhododendron and high alpine pastures at higher altitude, can be noticed within a span of a few miles because of vertical nature of the country. Different types of trees, orchids, medicinal herbs, birds, insects and butterfly all add to the hues of the jungle which abound in multi-colour flowers.

The hill are of the Darjeeling have approx. 118,000 hectares of the forest area which include approximately 115.000 hectares of the reserved forest (1022 Sq.Km). This contains valuable species of the soft wood timber, rare orchid, medicinal, aromatic plants and above all rare species of fauna and insects.

Broadly speaking the vegetation of the district shows two well marked tropical zones from the plain upto about 1000 m, a temperate zone from about 1000m to 3000ft. and temperate coniferous above 2000ft and alpine meadow.

The tropical zone comprises the slopes leading to the base of the outer hills and lower valleys of the Tista, Mahananda, Balasan, Jaldhaka, Torsa River, and is characterised by the forest of *Shora robusta* (sal) with a mixture of other trees such as *Dillenia Pentagyna*, *Butea Frondosa* and species of *Terminalia* and *Eugenia*. The forest in this part has perfect savanna characteristics and the other species in common

are Schima, Wallichia, and many species of figs. Beside various species of bamboo are quite common and shrubby elements; climbers and ferns are common.

The temperate zone is characterized by forest of gigantic trees consisting of Oaks, Chestnut, Walnut, Magnolia, Laurels, Maple, and Birches, and on the higher part of the lava and the Singalila ridges- conifer, rhododendron, Pine, Silver fir and dwarf bamboos abound. In temperate zone vegetation can be further be classified into two groups viz. temperate deciduous and coniferous vegetation. The temperate deciduous are found in the lower hill while coniferous are concentrated in the higher altitude Besides, there are large track of land under alpine meadow.

This richness and variety of the vegetation of the Darjeeling hill area are results of a number of physiographic, climatic, edaphic and biotic factors. Thus, like agriculture there is a distinct vertical gradation of the vegetation as mention below

Between 300- 1000m: Deciduous forest (Sal, Chap, Simul, Panisaaj,
Sesame, Palas, Bamboo, etc)

Between 1000-2000m: Temperate forest (Alder, Walnut, poplar, utis,
Pine (*Cryptomeria japonica*), katus etc)

Between 2000m-9000m: Conifer forest (Rhododendron, Dwarf
bamboo, Pine, Silver fir etc)

Between 9000 & above: exist the alpine meadow

However, absence of efficient scientific forest management, lack of the sense of the belonging, administrative bottleneck, and ruthless exploitation by forest dev. Corporation are some of the major factor for the deplorable state of the forest today.

(ii) Fauna

Although the Darjeeling hill area is a small in size in term of area, it contains a rich variety of fauna owing to the great variation in the climatic condition of the northern and southern parts, the former part extending to a height of more than 12000 ft in the himalaya and the latter part stretches to the plains. Among the larger carnivorous the Leopard are found in the northern tract and the clouded leopard and lynx are only stray visitors from higher altitude. Beside it is the homeland to endanger species like Red panda. Goral, Himalayan Bear, Himalayan pangolin, Deer, Rabbit, Jackal, Fox, Snakes and some reptile need to mention.

In the foot of hill in the south are found large Elephant along the forest tracts unto 3000 ft. Wild boar are found throughout the Darjeeling unto 8000 ft. Other animals are Monkey, squirrel, Moles; several species of Porcupines, Marteus, civets etc are common. In the northern portion of the hill, the Moonal pheasant, Blood Pheasant, Kalij Pheasant, Wood partridge, Wood Duck, Red Jungle Fowl are common. Beside there are varieties of other small birds present in the higher hills. In the southern part, red jungle fowl, Red spur fowl, Black partridge, Maina, parrot, peacock are found. Several varieties of Quail, snipe duck and wades found.

Some 120 species of fish have so far been recorded from this area. These richness in the variety of flora fauna need a special attention.

1.4 DEMOGRAPHIC RESOURCE BASE

1.4.1 Distribution of Population

The total population of Hill area of Darjeeling district according to 2001 census is 790591 persons of which 401520 are male and 389071 females' population over an area of 2600.15 sq km². This accounted for 50.78% male and 49.22% female. Block wise figure of population of the Darjeeling hill shows that it is highest in Pulbazar-Darjeeling with 223034 persons and the population is lowest in number with 51378 persons. The percentage distribution of male population to total population of block varies from 49.45% in Jorebunglow Sukhia block to 51.95% in Kalimpong block, while percentage of distribution for female range from 48.05% in 50.55% population (Table 1 & Fig. 2)

1.4.2 Rural and urban Population

The rural and urban components of the population accounted for 72.85 per cent and 27.15 per cent respectively. It is depicted from the Table 2 and shown in Fig 2 and 3. The people of Darjeeling hill area appears to have more prediction for town life, as almost every fourth person of the district is a town dweller, it is seen that urban population has increased rapidly and it's still taking place. The urban increased has surpassed the growth rate of the general population of the Darjeeling hill areas. The urban population dwells in the four towns, of which Darjeeling town has the

Table 1
Block-wise Distribution of Male and Female population in No, and Percentage (%)

Blocks	Total Pop.	% of Total Pop.	Total male Pop.	% of male to T. Pop	Total Female Pop.	% of female to T. Pop
Darjeeling-Pulbazar	223034	28.21	114370	51.27	108664	48.73
Jorebunglow Sukhia	100724	12.76	49816	49.45	50908	50.55
Rangli- Rangloit	64349	8.14	32304	50.20	32045	49.80
Mirik	51378	6.49	25731	50.09	25647	49.91
Kurseong	125886	15.92	63740	50.63	62146	49.37
Kalimpong - I	110678	13.99	56678	51.21	54000	48.79
Kalimpong - II	60263	7.63	31309	51.95	28954	48.05
Gorubathan	54279	6.86	27572	50.80	26707	49.20
Hill Area Total	790591	100.00	401520	50.78	389071	49.22

Source: District census handbook for Darjeeling-2001, West Bengal

largest with 108830 persons, which contribute 50.70% of the urban population of the hill. Kurseong rank second with 53882 persons that contribute to 25.02 percent of the urban population of the hill. The next position is of Kalimpong town and constitutes (42998 persons) 20.03 percent of total urban population and Mirik has just (9141 persons) 4.25 percent. Table 4 shows block wise distribution of urban and rural population in number and percentage.

Table 2
Distribution of Rural and Urban Population in Darjeeling Hill Area(Year =2001)

Blocks	Total Population	Rural	% of Total .Population	Urban	% of Total .Population
Darjeeling Pulbazar	223034	114204	51.20	108830	
Jorebunglow Sukhia	100724	100724	100	0	Nil
Rangli- Rangloit	64349	64349	100	0	Nil
Mirik	51378	42237	21.70	9141	
Kurseong	125886	72204		53682	
Kalimpong - I	110678	67680		42998	
Kalimpong - II	60263	60263	100	0	Nil
Gorubathan	54279	54279	100	0	Nil
Hill Area Total	790591	575940	72.85	214651	27.15

Source: District census handbook for Darjeeling, West Bengal

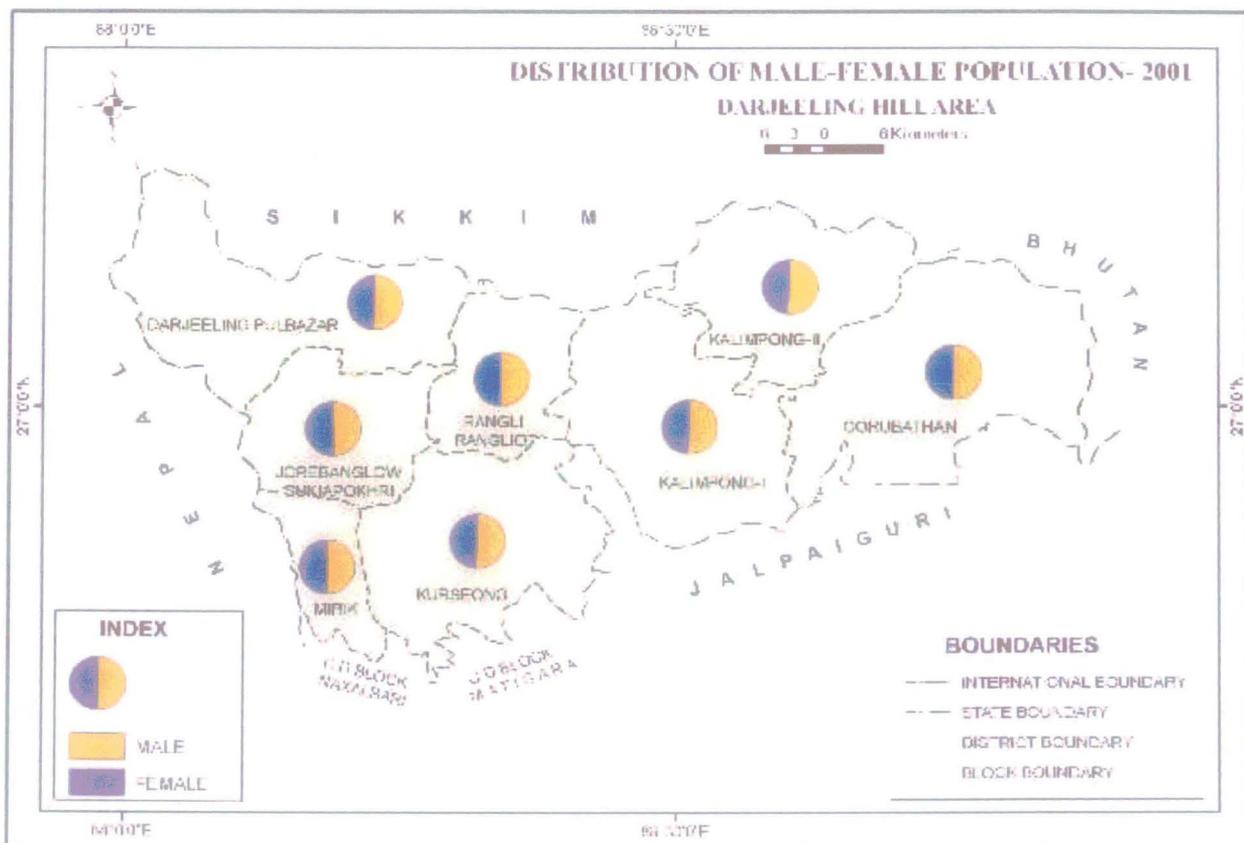


Fig 3

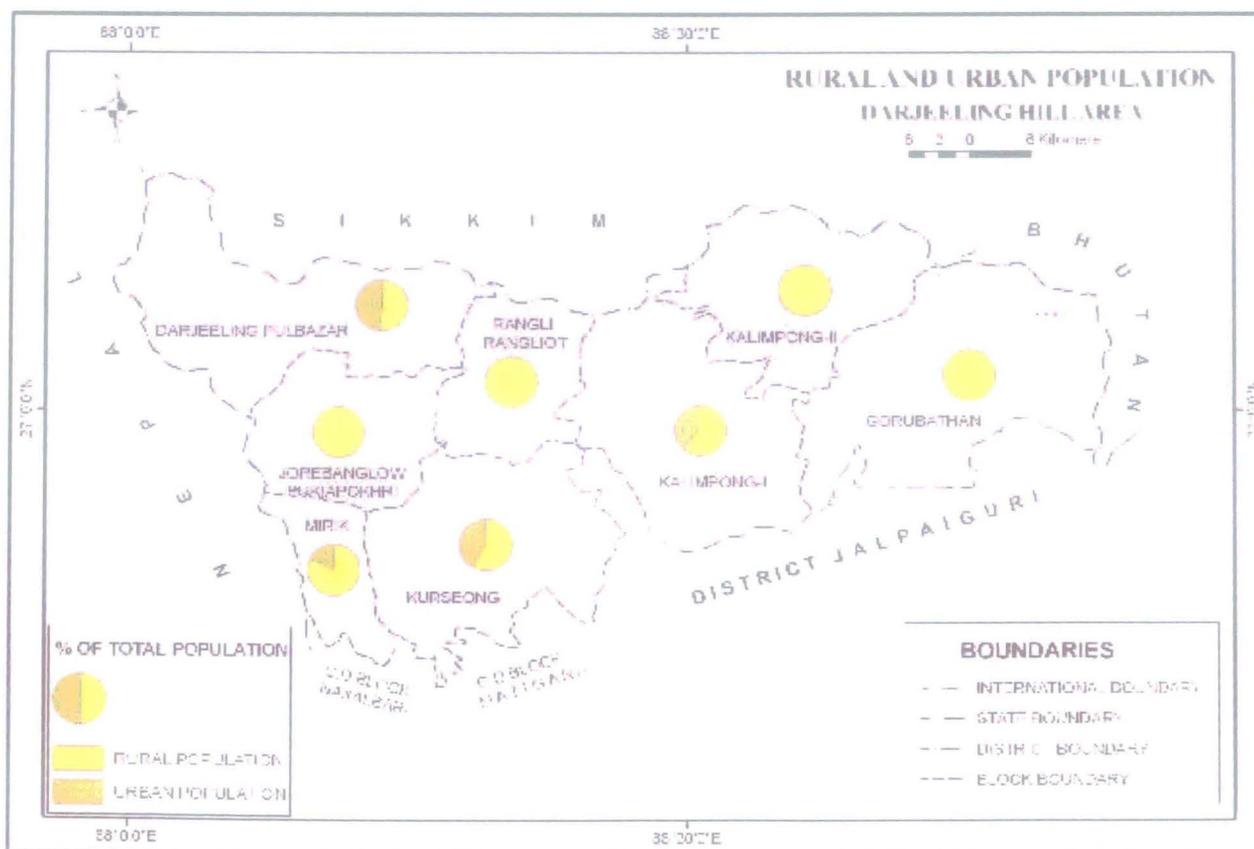


Fig 4

The four of the blocks viz., Rangli Rangliot, Jorebunglow-Sukhiapokhri, Kalimpong-II and Gorubathan have 100 percent of population. These blocks depend much on above mention towns for marketing and other facilities. Graph in Fig. 3 shows distribution of population is asymmetrical in the study area due to physiographic and other factors.

1.4.3 Density of population

Density of population on the Hill area of Darjeeling is strikingly uneven. The average density of population in hill area is 304.05 persons per Sq.Km. While within the different development blocks the density varies from 100 persons per Sq.Km. in Kalimpong-II to 963 persons per Sq Km. in Pulbazar Darjeeling development block. Compared to the state average of 904 persons per km² and all India average of 324 persons per Sq Km the population figures are alarming as it is only hilly and mountainous terrain in the world with the highest density of population.

The density of the study area could be still high if we delimit the habitable area, exclude the forestland and follow land and high slopes Table 3 indicate block wise density of population and the same is represented in Fig. 5. The density of the population in the study area is classified into four ranges. Darjeeling Pulbazar-fall in the higher range of 533.60 – 963.88. The density of population population in Darjeeling is 963.88 Persons Per Sq km. and has the the highest density. Business centre, Centre of Tourism, Tea industry, Large number of School, better transportation, Cultural centre, improved method of cultivation, fertile land and better urban amenities are the factors responsible for higher density of population. It is interesting to note that the world famous tourism Darjeeling of town is situated in this block.

Kalimpong-I, Mirik and Kurseong block fall under the range of 261.01 – 533.– 533.60 persons per Sq. Km. The density of population of Kalimpong-I is 533.59 persons per Sq.Km. The reason for higher density is obvious that the second largest Kalimpong town of Darjeeling hill areas. Kurseong block has 390 persons per Sq. Km and Mirik 627 persons per Sq. Km. Kurseong has comparatively lower density than Mirik this is due to the presence of large area under the forest land. Lower density of population is under the range of 121.50 – 261.00. The two rural

blocks Jorebunglow-Sukhia and Rangli Rangloit falls under this range. Kalimpong-II, and Gorubathan falls under range 100.29 – 121.49. The block wise density of population of Darjeeling hill is shown in Table 3 and Fig. 5 shows the block wise distribution of density of population of the study area accordingly. The density of population of each block has been depicted by choropleth technique

Table 3
Block wise Distribution of Density of Population in Darjeeling hill Area (Year =2001)

Blocks	Area in Sq.Km	Total Population	Persons Per Sq km
Darjeeling Pulbazar	231.39	223034	963.88
Jorebunglow Sukhia	385.91	100724	261.00
Rangli- Rangloit	307.69	64349	209.13
Kurseong	322.71	125886	390.09
Mirik	97.38	51378	527.60
Kalimpong - I	207.42	110678	533.59
Kalimpong - II	600.88	60263	100.29
Gorubathan	446.77	54279	121.49
Total Hill Area	2600.15	790591	304.05

Source: District census handbook for Darjeeling -2001, West Bengal

1.4.4 Sex Ratio in Hill Area of Darjeeling

Out of 790591 persons in Darjeeling, hill area in 2001. Male and female constitute 401520 persons and 389071 persons respectively. The sex ratio of the study area is 960 female per thousand male. The four blocks of Jorebunglow Sukhia, Mirik, Rangli-Rangloit and Kurseong have the average ratio higher than the average of the hill. It is in Jorebunglow-Sukhia block the number of female exceeds the male and the sex ration is 1021.92 female per 1000 male. Kalimpong II has the lowest sex ratio of 924.7 female per 1000 of male. Table 4 shows the Total male and female population as well as sex ratio for different blocks according to census report of 2001. Accordingly, sex ratio for the blocks is work out and grouped into four ranges Fig. 6 portrait the block-wise distribution of sex ratio in Darjeeling Hill according to the 2001 census.

Table 4
Block-wise Sex Ratio of Darjeeling Hill Area (Year 2001)

Blocks	Total Population.	Total Male Population.	Total Female Population.	No. of Female Per 1000 males
Darjeeling Pulbazar	223034	114370	108664	951.11
Jorebunglow Sukhia	100724	49816	50908	1021.92
Rangli- Rangloit	64349	32304	32045	991.90
Mirik	51378	25731	25647	996.70
Kurseong	125886	63740	62146	974.91
Kalimpong - I	110678	56678	54000	952.70
Kalimpong - II	60263	31309	28954	924.70
Gorubathan	54279	27572	26707	968.60
Hill Area Total	790591	401520	389071	968.90

Source: District census handbook for Darjeeling-2001, West Bengal

1.4.5 Schedule Caste Population

According to 2001 census there are 49089 Schedule castes constituting 6.2 percent of the total population. The percentage of schedule caste to the total population for each block is calculated. Table 5 gives the proportion of schedule caste population in Darjeeling hill. Accordingly, the population is grouped into four ranges, Viz., the highest percentage of Schedule caste (8.95 percent) is noticed in Kalimpong-I block Mirik and Kurseong block also high percentage of schedule caste population. Under range of 3.90-5.94 percent are three blocks of Darjeeling Pulbazar, Jorebunglow-Sukhiapokhri and Gorubathan. While Rangli Rangloit and Kalimpong-II block falls under range of 2.9-3.89 percent and has the lowest percentage of schedule caste population. Fig. 7 highlight the percentage of Schedule caste to total population of the Darjeeling hill at block level according to the 2001 census The blocks have been shaded by choropleth conforming various range.

Table 5 Block wise Distribution of Schedule Caste Population in Darjeeling Hill Area (Year=2001)

Blocks	Total Population	Total S.C. Pop.	% of total population	% of total S.C. Pop
Darjeeling Pulbazar	223034	11979	5.37	24.40
Jorebunglow Sukhia	100724	5991	5.94	12.22
Rangli- Rangloit	64349	2508	3.89	5.12
Mirik	51378	3715	7.23	7.56
Kurseong	125886	10103	8.02	20.58
Kalimpong - I	110678	9906	8.95	20.17
Kalimpong - II	60263	1805	2.99	3.68
Gorubathan	54279	3082	5.67	6.27
Hill Area Total	790591	49089	6.2	100

Source: District census handbook for Darjeeling, West Bengal

1.4.6 Schedule Tribe Population

According to 2001 census, there are 85047 Schedule Tribe constituting 10.75 percent of the total population. The percentage of schedule Tribe to the total population for each block is calculated. Table 6 gives the proportion of schedule Tribe population in Darjeeling hill. Accordingly, percentage of the population is grouped into four ranges, Viz., the highest percentage of Schedule tribe (24.61 percent) is noticed in Kalimpong-II block under range of 15.64 24.61 percent. Nearly 17.44 percent of the populations are under this range. Accordingly blocks are categorised under various. Fig.- 8 highlight the percentage of schedule Tribe to total population of Darjeeling by blocks according to 2001 census. The blocks have been shaded by choropleth conforming various range.

Table 6 Block wise Distribution of Schedule Tribe population in Darjeeling hill Areas (Year- 2001)

Blocks	Total Population	Total S.T Pop.	% of total population	% of total S.T. Pop
Darjeeling Pulbazar	223034	21720	9.73	25.53
Jorebunglow Sukhia	100724	6945	6.89	8.16
Rangli- Rangloit	64349	5028	7.81	5.91
Mirik	51378	3439	8.69	4.04
Kurseong	125886	9901	7.94	11.64
Kalimpong - I	110678	17299	15.63	20.34
Kalimpong - II	60263	14835	24.61	17.44
Gorubathan	54279	5880	10.83	6.91
Hill Area Total	790591	85047	10.75	100

Source: District census handbook for Darjeeling, West Bengal

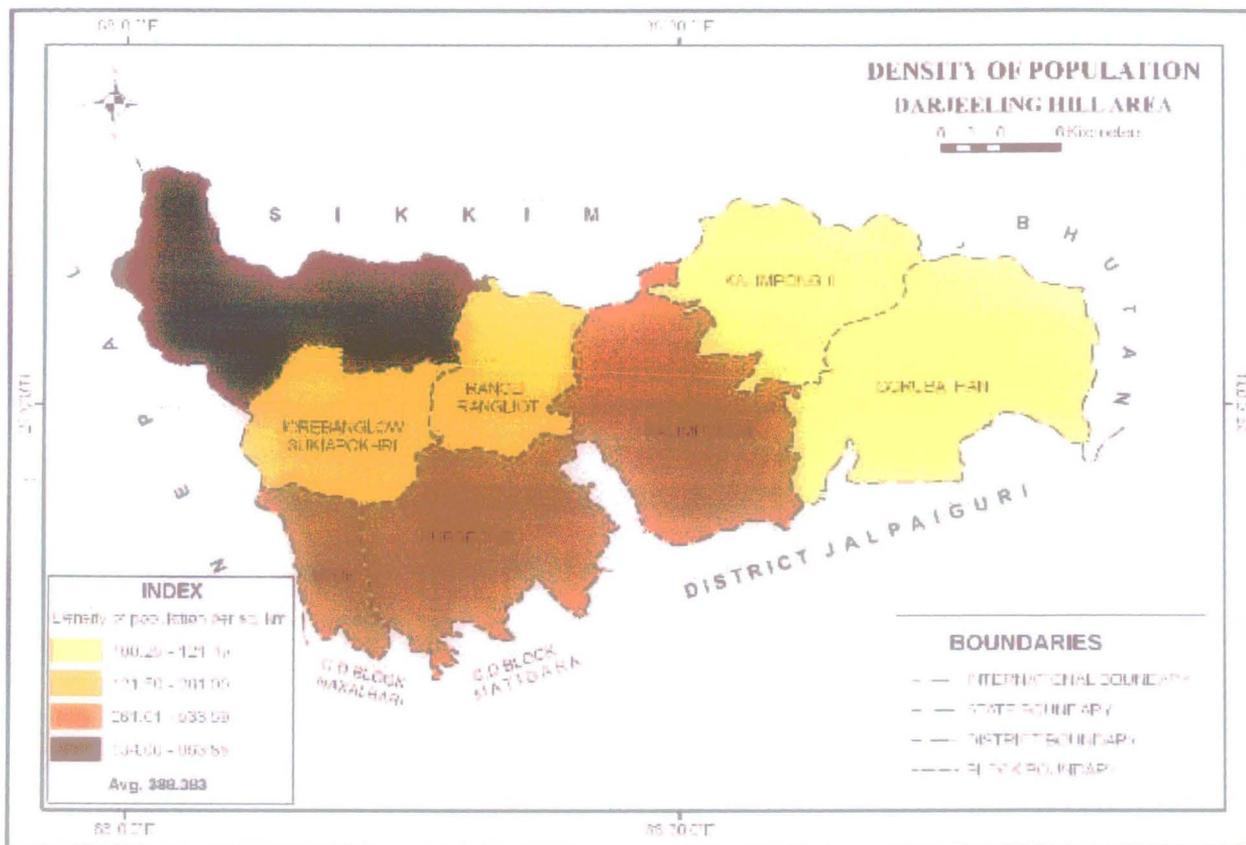


Fig. 5

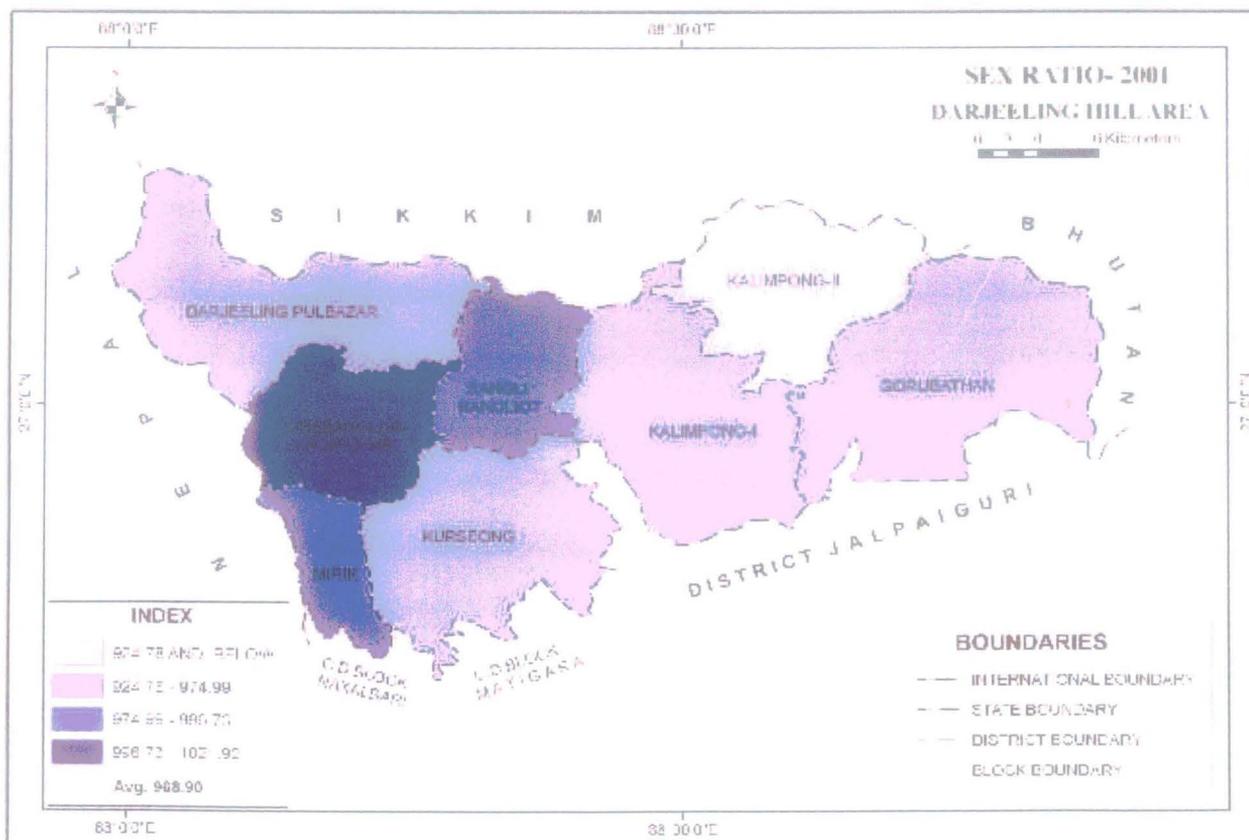


Fig. 6

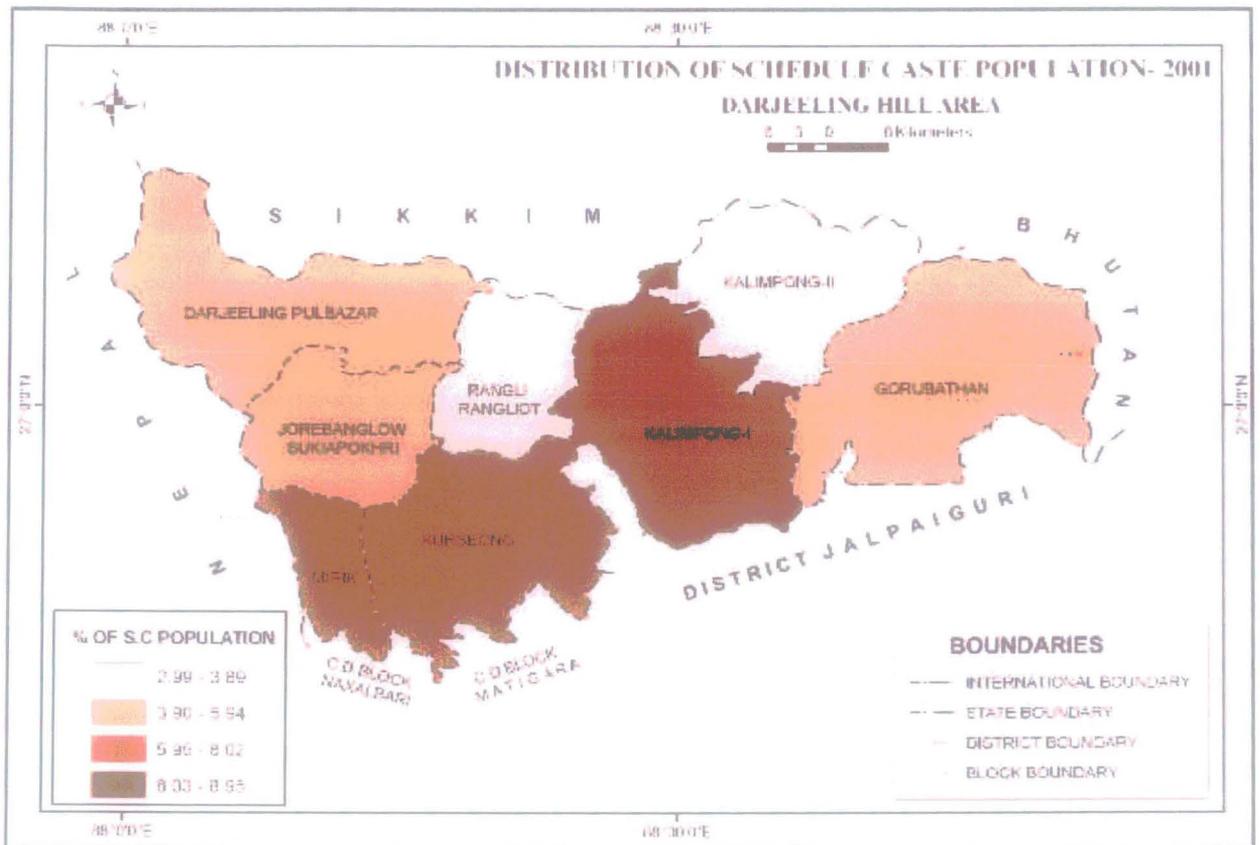


Fig. 7

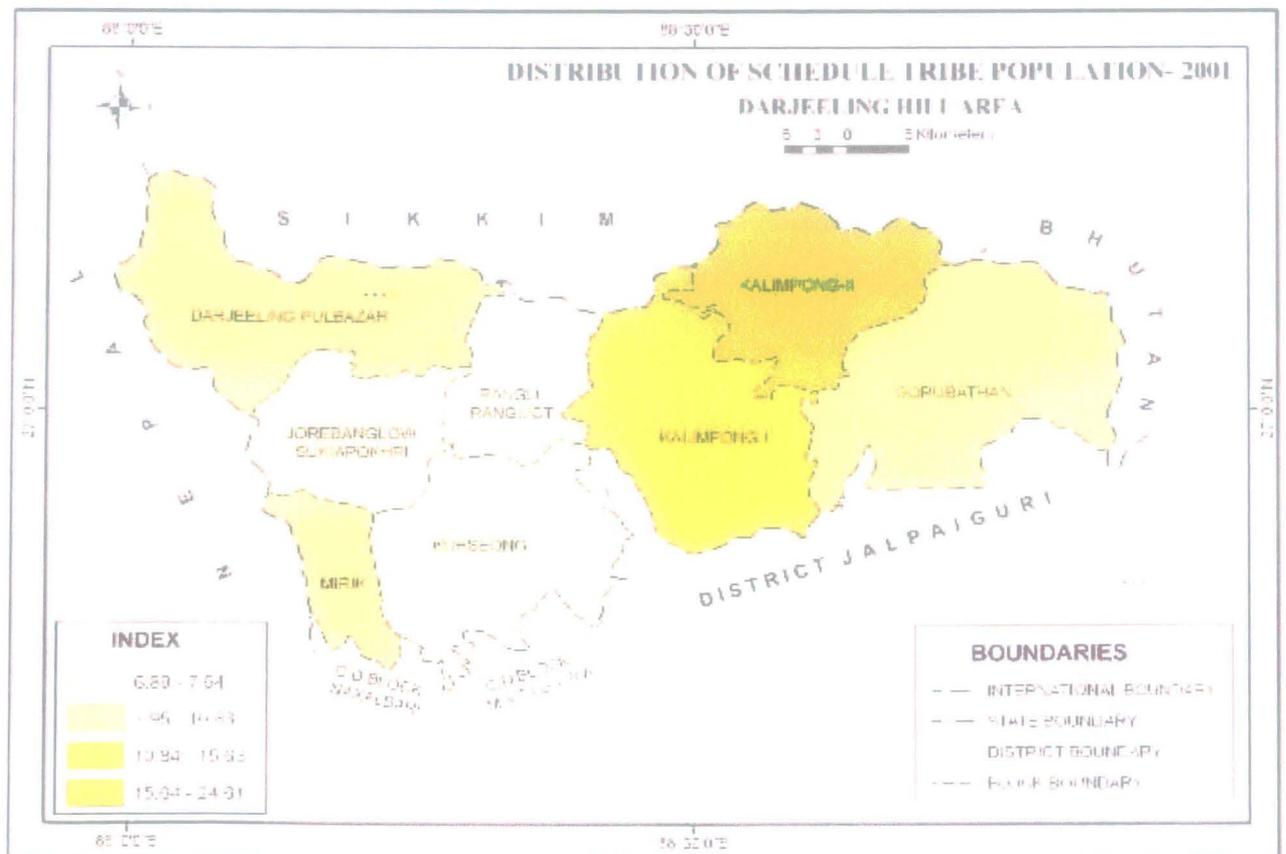


Fig. 8

1.4.7 Literacy of Population

Human resource constitutes the ultimate basis for the wealth of the any state. The principal institutional mechanism for developing human skill and knowledge in the formal education system. Education is a key factor for the rapid development of the country. Education is not only the fruit of contemplation but an instrument of change also. As a matter of convenience, literacy is defined as the ability to read and write one's name in one's own mother tongue. A literate person is one who is able to both read and write. A person who can neither read nor write is called illiterate. A person who is able to read but not to write is called semi-literate. In India all those person both read and write a simple message with understanding in any language are called literate. This definition is proposed by the united nation population commission

Table 7 shows the distribution of the literate population of Darjeeling hill in blocks The census had recorded the total population of the Darjeeling (excluding the age group 0-6) at 708546 persons out of which 708546 are literate, accounting to an average literacy for 77.02 percent of total population of the Darjeeling hill. Over the different blocks, the percentage of literacy varies from lowest of 66.92 percent in Gorubathan block and highest of 81.22 in Pulbazar-Darjeeling block. Accordingly, the percentage of literacy in the different blocks is classified under the four ranges. Fig. 9 shows the distribution of literate population of Darjeeling hill in blocks based on the choropleth technique

Table.8 shows block wise distribution of Male and Female literacy to total of male and female population of Darjeeling hill Areas (excluding 0-6 age group) according to census report of year 2001 Male and female literate are 305955 persons and 176545 persons respectively (excluding male age group of 0 – 6 age) while the percentage of male literacy to total male population is 85.02 percent and percentage of female literacy is 68.77 percent. The percentage of male literate is highest in Pulbazar-Darjeeling (87.95 percent) block and lowest in percent in Gorubathan block. (76.21 percent). The percentage of female is highest in Darjeeling block with 74.13 percent and lowest with 57.22 percent in Gorubathan block. Fig. 10 shows Block-wise Distribution of Male and Female Literacy to Total of Male and female population of Darjeeling Hill Areas (excluding 0-6 age group)-year 2001. The

distribution of literate population of Darjeeling hill in blocks based on the choropleth technique

Table 7
Block-wise Distribution of Literate population and percentage
(Excluding 0 – 6 age group) in Darjeeling Hill Area year- 2001

Blocks	Total Population	Population in Age group 0-6 yrs	Total Literate Population.	% of Literate to Total Population
Darjeeling Pulbazar	223034	20001	164914	81.22
Jorebunglow Sukhia	100724	9959	69600	76.68
Rangli- Rangloit	64349	6679	41958	72.75
Mirik	51378	5832	33514	73.58
Kurseong	125886	12929	89690	79.4
Kalimpong - I	110678	12352	77611	78.93
Kalimpong - II	60263	7069	37012	69.57
Gorubathan	54279	7227	31491	66.92
Hill Area Total	790591	82048	545790	77.02

Source: District census handbook for Darjeeling, West Bengal

Table 8
Block-wise Distribution of Male and Female Literacy to Total of Male and Female Population of Darjeeling Hill Areas (excluding 0-6 age group)-year 2001

Blocks	Total male Pop.	Total literate Male Pop	Total literate female Pop.	Total literate Female Pop.
Darjeeling Pulbazar	104184	91632	98849	73282
Jorebunglow Sukhia	44817	38929	45948	30671
Rangli- Rangloit	28823	23658	28847	18300
Mirik	22748	19034	22798	14480
Kurseong	57164	49878	55793	39812
Kalimpong - I	50334	43071	47992	34540
Kalimpong - II	27717	21432	25477	15580
Gorubathan	24038	18321	23014	13170
Hill Area Total	359825	305955	348718	176545

Source: District census handbook for Darjeeling, West Bengal

1.5 LAND USE PATTE

Of the total reported area of 2600.15 Sq.Km, 59.24 percent of the total area lies under forest, 18 percent fall under net sown area, 21 percent is under tea cultivation and rest of area comprises of waste lands. Due to increase in population,

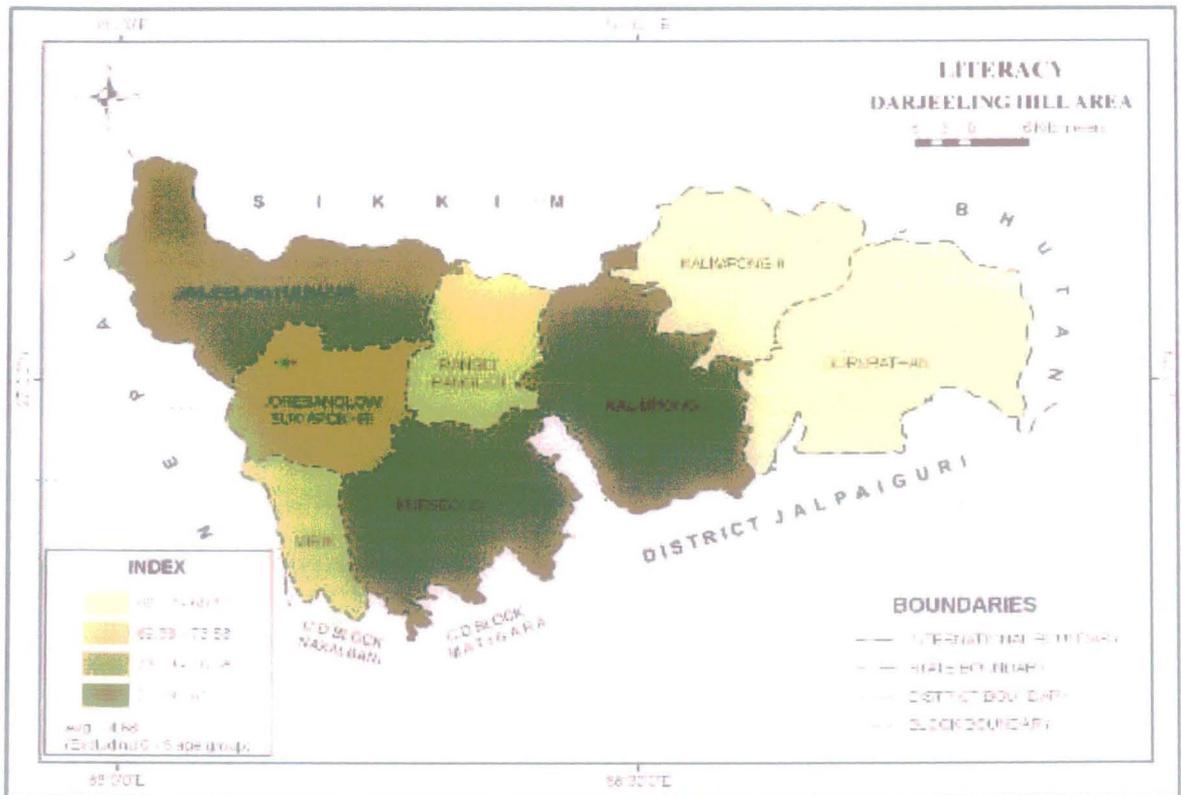


Fig. 9

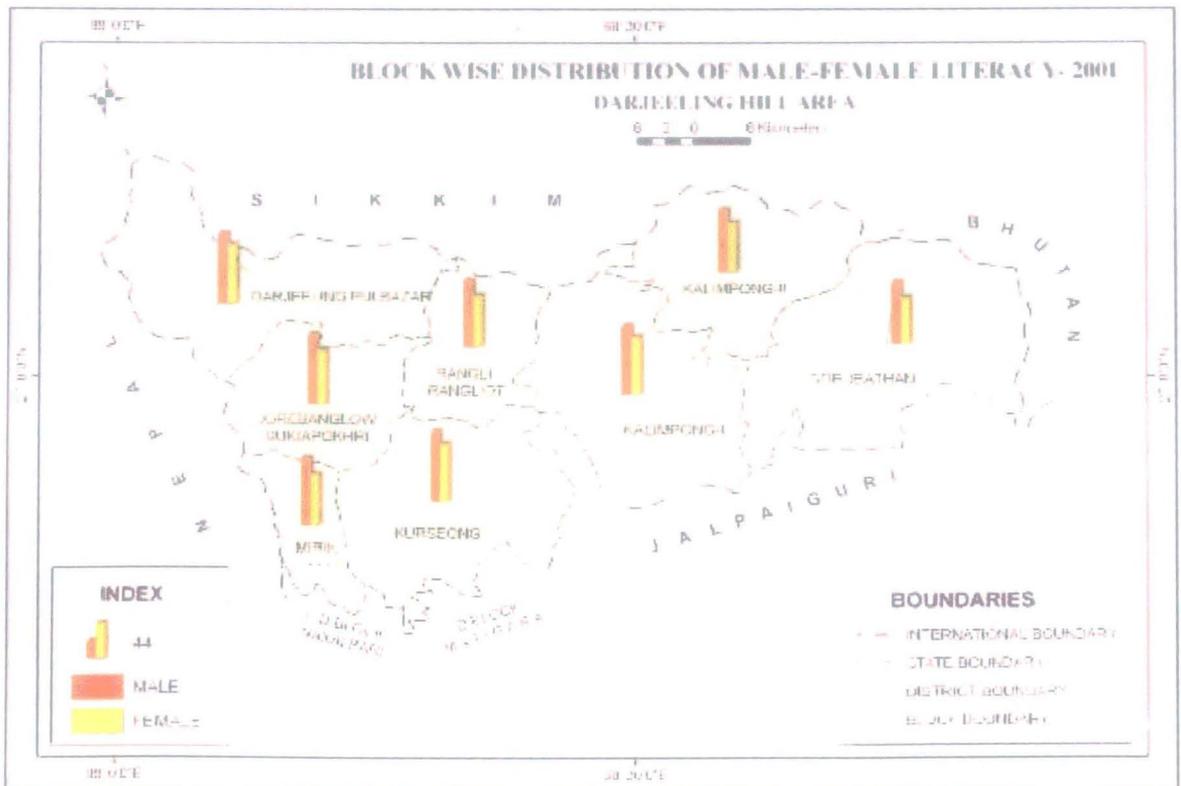


Fig. 10

acute scarcity of cultivable land is making a strong case for intensive cultivation. As of now increase in population has invaded even part of land for residential purpose. There by reeling on the available land even in the inhospitable terrain

1.6 CROPPING PATTERN

An analysis of cropping pattern reveals that in the hill region, net area available for cultivation is 86856 acre where as gross cropped area is 145049 acre and the cropped intensity is 167 percent. The prominent crops are Maize (44.06 percent), Paddy (14.06 percent), vegetable(8.80 percent), they together account for 66.92 percent of the total cropped area. The remaining area is covered with ginger, cardamoms, orange, millet, wheat and other. Of these crop paddy is mainly concentrated in the lower valley where the climate is hot and moist and irrigation is possible. In the higher altitude the potato maize are grown commonly.

1.7 LAND HOLDING AND AREA UNDER IRRIGATION

Most of the holdings are very small. 48 percent of operational holding figure in the size of less than one hectare and cover about 22.06 percent of net sown area of the hill. 25.67 percent of holding fall in size of 1 to 2 hectares groups and occupy about 25 percent of the area. 20 percent of the holding falls under the range size of 2 to 4 hectares and covers more than 31 percent of the net sown area. While 6 percent of the holding fall under the range size of above, 4 hectare group and comprises of about 21 percent of the area. Thus in the higher size range although the percentage of holding are small in number yet it covers higher percentage of the net sown area. The block wise distribution pattern of operational holding do not vary much

Total irrigated area in hill region is 25898-acre nearly 30 percent of the net sown area. Irrigation is mainly done by Jhoras tapping, Polythene pipe, Bamboo cut and other measures.

1.8 ECONOMIC BASE ACTIVITIES

1.8.1 Agricultural

The physical geography of the Darjeeling hill areas makes the condition for the agriculture extremely diverse. The Terai is in the south and contains many level stretches of the alluvial soil admirably suitable for rice cultivation. However, there are considerable areas of poor ground and the river beds are wide and generally infertile or unsuitable for cultivation. of any kind, but on the gentler slopes the soil is often of wonderful fertility.. Altitude and aspect have important effect on agriculture. No crops are grown above 9500 feet above sea level owing to the cold. Landslide and river erosion do harm locally to cultivated areas.

It is heartening know that the region is believe to have the highest density of population in the mountainous slope of Himalayan region. As registered an average density of population of 304 persons per square Km. in hill area of Darjeeling district of which it accounts for 963 persons per Sq. Km in Pulbazar-Darjeeling Block. The tremendous pressure of population has led to extension of agriculture even on extremely deep slope which is otherwise unsuitable for the purpose. Agriculture as practiced in the hill can be classified as – High, Medium and low altitude area of cultivation.

In the high altitude areas (1250m and above) agriculture is subject to various physical and other constraints due to which productivity per unit area is very low. Potatoes, maize and finger millets are the three main crops grown on the terrace, beside vegetables are also cultivated in the villages which have good transport network or are located in vicinity to towns. The greatest limitation that comes in the way is excessive moisture during monsoon causing great loses in nutrients and other bases resulting in very acidic nature of soil which in turn fixes heavy amount of phosphatic fertilizers. Further low temperature and moisture stress during post monsoon period limit the possibility of growing successful crops of rabi season. However, permanent cultivation system under upland terrace condition in high altitude region has not received adequate attention.

In the middle and low altitude region rice, maize, millet, wheat and oats are most important cereal. Tuber crops such as potatoes, tapiocas and sweet potatoes are

also grown in plenty, other important cash crop of this region includes ginger and large cardamom. Beside, oil seeds primarily mustard, pulses such as pea, soybean, French beans, kelai dal are well grown in this region, and a varieties of winter and summer vegetables are grown. Depending upon the fertility status and irrigation productivity of crops per unit area and time can be increased by adopting relay, mixed double of multiple cropping by ameliorating the soil acidity

1.8.2 Animal Husbandry

Work in this respect is to be viewed as on integrated whole rather than in a piecemeal way. Animal husbandry has a greater potential for generating supplemental income and employment since a large number of people are engaged in poultry, piggery, cows and goatery. Beside it assumes greater importance in the light of supply of organic manure and in addition, it help in promoting bio gas plant to meet the energy requirement. There is a constant thrust by the community in improving the stocks. More over for past two decade and more institutional set back in the sector is appealing. It is felt that an urgent emphasis on animal husbandry programme is looking forward in realizing the scientific improvement with the objective of qualitative improvement.

1.8.3 Sericulture

The importance of sericulture in the hilly area of Darjeeling is because climate of hill is congenial for the plantation of mulberry beside introduction of sericulture has added advantage over the employment generation.. The programme of development of sericulture was taken up during SFDA regime. The largest group farmers were encouraged in the mulberry cultivation and raising of cocoons. It offers an additional income for the village folk during the silkworm-rearing season. The production of the cocoon is presently flourishing with the assistance of Sericulture Dept. of Govt. of West Bengal. The promising start of the sericulture industry is possible if initiation is laid for the increased production of qualitative silkworm in the hill areas of the Darjeeling District.

1.8.4 Horticulture

Land not used for the agriculture or the land at the higher altitude not suitable for the agriculture and land put to less remunerative crops can be used for the horticulture development. The richness of the physical environment of the Darjeeling hill areas of Darjeeling is so vivid and rich that varieties of fruits are grown. Nonetheless, the credit of preservation and flourishing till date lies specially to people for their constant effort. It is here varieties of tropical and temperate fruits are grown like orange, olive, peach, plum, guava, papaya etc are grown in plenty. Moreover, Darjeeling mandarin is famous for its taste and favour, if efforts are made to improve in the technology in packing and transport there is every possibility of great future for large-scale expansion of orange cultivation, such an holistic approach can give new height in generating the economy of the region

1.9 INDUSTRY BASE RESOURCE

1.9.1 The Tea Industry

The establishment of the Tea industry in Darjeeling Dist. is due to the enterprise of Dr. Campbell who was appointed superintendent of Darjeeling at a time when Attention: was being attractive to the possibility of starting and developing the cultivation and manufacture of tea in the territories under the East India Company.

The first commercial tea was planted at Tukvar and Alubari in 1852 with the seedling raised in the Government nurseries. By the year 1856, the industry began to be developed on an extensive scale, especially on the lower slopes as it was believed that elevation of Darjeeling was too high for the plant to be needed productive. Some fourteen year after the first commercial planting in the Darjeeling District increased many fold.

Some 103 Tea garden sprang up subsequently producing what is acknowledge as "Darjeeling Tea" and the area on which this is produced is probably 16,500 hectares. The total production to about 12 million Kgs. It emerges as the biggest industry in the region and generating the largest employment in the area and boosted a turnover of nearly rupees seventy crores. Apart from the direct employment opportunities, the population also earns their livelihood from peripheral sector of the

industry consisting of transport, supplies, repair, establishment etc...However, it is disheartening to note that in the wake of development in post independent era this sector has seriously effected with diminishing return. It is perceptible that today hardly 70 tea garden are functioning crippling with scores of ridden problems. This setback is recognised through failure of management, lack of enterprising attitude and policy of the stake holder; and vision of the government

The tea cultivation in the district ranges from 300 feet above sea level in the Terai to above 6000 feet in the hills areas of Darjeeling. The important factors influencing the growth of tea are related to altitude, soil, aspect and slope of land and climate is favourable. As regard the edaphic factors it is important that any good soil is suitable for tea cultivation. The soil of the Darjeeling varies from red clay to sandy loam it is found all the type of soil are suitable for the plantation of tea. Beside rainfall and temperature are also found in tune to its growth. Due to peculiarities in geographical factors much of the plantation in the study area have been planted with the "chine" variety and subsequently other variety known as "Assam Indigenous" has been in favour. Together with the geographical, economic and social factors, Darjeeling hill has been capable of producing the vary finest tea of the world known by its name and brand "Darjeeling tea." And has international recognition.

1.9.2 Cinchona Plantation Industry

The rhetoric of the bountiness of the nature endow can also be assessed from the cultivation and nurturing of medicinal plants as found in varieties in the study area. Darjeeling hill is home to many medicinal plants viz., Cinchona, Ipecac, Dioscoria, and many other indigenous medicinal plants. Cinchona plantation in Darjeeling started in 1861 but it took a long time to chose the plantation. After prolonged trial and error, a cinchona plantation was finally established in Darjeeling Himalaya, which was in Mungpoo after the name of the village. Cinchona plantation was confined to this area till 1900, when a second plantation was opened at Munsong situated towards north east part of hill in Kalimpong. A third plantation was opened uo in Rango in year 1938 near Bhutan boarder. The fourth cinchona was started at

Latpanchar in 1944. All the four-plantation units are in the hill area of Darjeeling District. The gross area of the cinchona plantation is about 22,000 acres.

All the cinchona plantation produce in the plantation is sent to quinine factory at Mungpoo for manufacture of quinine and other allied product. About 800 to 900 tonnes of dry cinchona bark is every year producing approximately 30,000 Kgs quinine Sulphate and 10,000 Kgs of cinchona. The establishment of plantation goes back to British Raj presently it is going through a strenuous phase. Further with the extensive competition from the development and scientific uses of synthetic drugs as substitute the demand in the international market has slacken, beside management and policy of the Government is under a big question as it is govern under the directorate of cinchona plantation under Govt of West Bengal. However, it provides livelihood to thousands of workforce and it worth mentioningwwe

1.9.3 Tourism

Tourism the smokeless industry is however a latecomer on the Eastern Himalaya. It traces back as post independence phenomenon in the Darjeeling hill areas. Since Darjeeling is positioned in the international tourist map, a stream of visitors from home and abroad come to get a hold of scenic grandeur over-seeing and enjoying the calm and serene atmosphere, colourful people etc. Further with the declaration of UNESCO world heritage site for recognizing Himalayan railway with flavor of Darjeeling tea, cinchona, cardamom, orchids, fruits, botanical and zoological paradise: its people culture and their craft Beside Darjeeling have been the land of cultural amalgamation and the taste such a blending have made people in itself matters of interest needs to accent and explore. This unique social set-up cultivates a fragrance to those tourists of interest and it is doubtless Darjeeling is a pristine destination for the tourist. Recognizing the fact tourism play a significant role in the regional economic growth and development in the study area and surrounding. It would not be an ambiguity to spell that much of the development of the region owes its debt to tourism, which need little emphasis for promotion. The economic impact of tourism for the regional development are not for the seek. It earns a valuable foreign exchange, revenue from domestic tourist alone (Annual average of

Rs 60 Crores-) act as a catalyst of development activities through the creation of infrastructural facilities like roads, water supply, sanitation, sewage disposal, electricity, medical facilities, educational and recreational facilities, which would provide added employment avenue

Nature has very favourably bestowed Darjeeling hill with her bounties to acclaim for the status of "Queens of Hill". The glory pacify with its crown of stately pine wood, Rhododendron forest, lush green Tea plantation, down slopes terrace farming, spurs on its back ground with breath taking view of Kanchanjunga, the cool bracing climate in sharp contrast to the sweltering heat of the plains lying in the immediate south

However, the scope of tourism has not just remained confined to hill areas of Darjeeling alone. The improvement in transport and communication with the growing interest in trekking and exploration enlarge the scope greatly in the recent years, and have certainly facilitates the visitors going deep in the mountain. Thus, tourism provides for healthy living to a large contingent of working population in the different sectors.

1.10 RESOURCE PERCEPTION AND PERSPECTIVE IN DARJEELING HILL AREAS - AN APPRAISAL

In an assessment of the resource it is essential first of all to perceive the nature of resources in the geography background and also to develop a correct perspective not only with respect to the associated problems but also with regard to the role these can play in the economic development of the region and future planning. In fact, the very moment we conceive a resource - it implies prospecting, exploitation and utilization. Resource it is said, do not exist but are made and the very concept of resource implies the desire and the need of the man to make a specific resource useful. Obviously, a miner allying deep underground, the swift flowing water in deep valley, the thick forest or high and majestic snow covered mountain peaks cannot in nay sense be treated as a resource unless someone is there to perceive its utility. The world famous 'Kanchenjunga mountain" or near home – picturesque valley with cascade and water falls or natural garden – would have remain in dark, like many

more scenic spots of the world, unless one could discover, publicize and make use of the same. There are number of 'aesthetic valley' in the remote and inaccessible part of the hill area of Darjeeling, but unless appreciated by man are as good as tons of precious and valuable minerals buried deep underground, volume of unharnessed river water or simply a barren rocky slope.

So, once it is desired that the resource be utilised, it become necessary to explore the possibilities for the same and also to examine infrastructural need on which only can any large scale exploitation be based. Then political and administrative factors have their own say and decision. What is desirable is that resource utilization should, on one side, keep pace with the technical skill, cultural milieu and consequent demand of the society and also maintain an ecological balance on the other. The extreme view, from whatever quarter they are, can lead to nowhere.

The above, however, does not in any sense imply that the exploitation and the use of resources in Darjeeling hill area have no problems as such. It is indisputable that centuries of human impact have deprived the hill slopes of their most valuable resource- which not only serve the economic needs but it is important for maintaining the ecological balance. Similarly much of the area is still awaits prospecting for minerals. The terrace slope through generation of tilling and vagaries of erosion are getting more and more unproductive. Similarly unrestricted development of roads is giving rise to progressively new problems such as landslide, erosion, silt in river etc. But analyzing above facts in isolation may not lead to any logical conclusion unless there are views in perspective of the entire ecosystem. For example, construction of roads undoubtedly might have set in many disastrous processes; no one can deny the fact that all economic progress that we see today is the direct result of roads. While it is important to build road as because of strategic point of view, it is equally important for economic and cultural growth, for the road serve as media of spatial interaction and cultural contact. It is incomprehensible as such that this can ever act as a deterrent but surprisingly enough it does – specially when roads are not designed according to the pattern of spatial interaction and economic need of the an area but rather cater the ever changing need of politicians. Such decision should rather base on the ecological perception and development should be in perfect harmony with the ecological factors.

In fact, one has to perceive all possible facets of the issue before emanating from utilisation of resource without first appreciating all possible aspects sometimes prove to be the real crux of the problem.

Coming specifically to the resource of the region, it should be made clear at the outset that in order to arrive at a rational probe into the current problems, each and every resource should be viewed in relevant perspective because these considerably differ with respect to potential, prospect of utilization and development strategy. The hill area (The Himalaya) or the veritable storehouse of natural resources is presently facing acute problems of soil and water conservation, expansion of cultivable land, extinction of forest, irrigation and above all – the lack of economic opportunities for growing population that ultimately results in large scale emigration of the working age group. While on the one hand, the very existence of the man is threatened with vanishing supply of water, on the other the backbone of the agrarian society, i.e., the young mass is progressively rendering these areas devoid of human resources.

The forest one time valuable assets are fast depleting and, of late, have become a controversial resource especially in the context of reckless exploitation in the past for serving the needs of industries located outside the region, and its resultant adverse effects which have initiated the mass dissent. Thus most of the virgin forest, as a potential resource, has to be viewed in the changed perspective in certain cases, forests are and will remain to continue the basis of many small scale industries without effecting a reduction in forest cover. We can not at the same time overlook the never ending fuel problem in hill areas and avenues and alternatives for the same have to be worked out if forests are to be saved. We may, however, stop the commercial exploitation of this resource but unless the fuel in the hill areas is solved appropriately, forests are not liable to escape the impact of man. So long man remains around, certain amount of evil impact on this resource cannot be ruled out. For this social awaking among the masses is essential. The biotic impact on natural vegetation somehow has always been underestimated. It is, therefore, within the framework that the problems of this resource have to be viewed and analysed.

Agriculture, due to a variety of constraints imposed by mountain environment, cannot be a dependable economic pursuits over a larger proportion of the land. Thus

there is hardly any scope of increasing the present percentage of arable land substantially. The intrinsically subsistence type of agrarian economy thus render a large manpower surplus and it is by far one of the most serious issues faced by agrarian economy- besides such universal problems as soil erosion, infertility, dry cultivation, poor return, conventional methods etc. In fact, under the present state of resource in the country, we cannot anticipate each and every part to be served or provided with modern technology or advancements and more so in high hill areas where every altitude presents a unique set of advantages and disadvantages for cultivation. The only alternative in hill areas of Darjeeling thus appears to be the use of land according to its capability. It is true to its capability that long back British reap the profit with the introduction of tea and cinchona plantation in the Darjeeling hill areas. Such, venture in the other variety of crops need attention to benefit the masses.

Water, the prime resource, has its own problems, since it has a different kind of potential at different altitudinal areas. It is therefore analysed and planned accordingly. The proper utilization of the water resource in this area therefore is a still bigger problem. While on one side there is a question relating to assessment of potential, adequate technology for irrigation or human use , generation of power etc. and the infrastructure for making use of the above- there are more vital issues specifically pertaining to the conservation aspect of these resource specifically in the wake of a growing number of defunct springs, diminishing discharge in streams and springs and related aspects of controlling soil erosion or flood in down stream areas; and if at all it is desired to act as a resource serving mankind, it should first be ensured that:

- (i) Huge and artificial reservoirs of multipurpose projects do not create any environmental problems as huge dam is geologically unstable in these parts of fragile hill.
- (ii) Likewise, it has also to be ensured that the huge investment in such project proves its worth and the life and functioning of these is not threatened by grave consequences of siltation of river, earthquake etc.

Next to water are minerals and the region, with the current status of knowledge a bounds a variety of this resource. Proper utilization however cannot be conceived because of fragile topography, beside the region has low level of economy as huge investment is require for exploration, exploitation and utilization and also to develop the infrastructural facilities. Presently lack of such factors is note worthy to its development. In fact, the potential or the development of mineral resource has little relevance to the problems of economic development of the hill areas, where, leaving apart the basic amenities of life, it is difficult for people to make two ends meet. The benefit of the mineral exploitation may accrue to the region as a whole but in true sense will confined to a section of the society only.

Among all the resource analysed so far tourism can no doubt effectively bring about large scale economic change. This appears true firstly because of the popularity and large number of tourist the region and secondly due to region being endowed with a large geographical variety that present an unlimited scope for the development of tourism. The entire region is endowed with scenic variety with areas predominating with forest, alpine pasture, lush green tea garden, picturesque valley and mountain and many more, abounds in the areas of tourist interest and the region is of course a tourist paradise. The region is famed as “Queen of Hills” as the region has an unending scope for the development of tourism. This however, is not going to be so simple unless the ‘trick of the trade’ is not learnt and the tourist is not treated as a potential customer. In this context, t will equally be imperative to to plan all development on the basis of tourist preferences instead of tourist popularity measured in terms of the number of tourists visiting any place. Thus it will be worthwhile to get some surveys done to know the nature of tourist traffic and tourist preferences. Plan based on this cannot only serve the real interests of tourism in these areas but can also lay the correct foundations for its growth into a real industry.

Finally it would not be inappropriate to analyse the whole situation with regard to the most basic of all, i.e., the human resource. Unlike the plain, the hill areas have a low population supporting potential. The agricultural expansion is limited by factors of topography and climate and thus it has not been able to keep pace with the growth of population- a condition which has initiated migration of working age

groups to urban areas or plains or to foreign land, the population being surplus in the subsistence type of economy. The gravity of the problems has little been realised and the present situation leaves space for speculating whether it is at all worthwhile to invest heavily on resource development— totally ignoring the fundamental of all- the human resource which ought to be channelised and tapped at source and which, in fact, is basic to the very idea of resource use. So if we cannot create an environment that appreciably and effectively check this process, it is a certainty that in time to come only the old, infirm and children will remain in the hill areas to reap the benefit of all development being contemplated now. This aspect too has not been appreciated at all and it is high time that planning be based on appropriate surveys carried out by social scientists.

At this stage it may also be appropriate to make a mention of a serious anomaly- the problem and the planner acting as two ends that never meets. The role of planning authority is thus little different then prescribing treatment without first diagnosing the ailment. An ecologist or geographer can bridge the gap and lead the way to strike the balance. On the contrary, there appears to be a deplorable lack of serious thinking towards hitherto unexplored but environmentally suitable economic pursuit specially tiny and small scale industries including the development of Traditional handicrafts, development of appropriate means of communication- roads. Ropeways etc., development of feasible project like micro-hydel plants etc. Likewise, least significance has been attributed to some of the vital problems such as large scale emigration of active population, fuels need, deterioration of water supply, rehabilitation of natural calamities affected population and amidst much hue and cry about lopsided development or depletion of resources, there have been little efforts to visualize the entire economic growth in the ecological perspective. Huge amounts are invested on agriculture development without first knowing what is the intensity of land use, pressure of population, the cropping pattern and the environmental constrains. It therefore, emerge diagnostic survey as essential. It is thus necessary that the intellectuals, politicians, administrators, planners and academicians- should think alike and develop a clear perception of the real malady so that they are able to strike on right issues. All the future utilization of resource should be based on the exploratory studies for a balance as well as the most efficient utilization of resources in the study areas.

APPENDIX – II

SURVEY QUESTIONNAIRES

(Survey Performa on the Economy of Traditional Handicraft):

I. General Description

1. Name of the unit _____
2. Name of Artisans _____
3. Address: _____
4. Village/ town ` _____
5. Name of Block _____
6. Manufacturing Main Craft _____
7. Year of Estd _____
8. Type of organization - household/ Cooperative /Registered/un-registered
/other _____
9. Ethnic Background _____
10. Principle occupation _____
11. No of subsidiary Artisans _____
12. Same family / other paid worker _____
13. Average cost of production per article in Rs _____
14. Repairing cost _____
15. Transport cost. _____ Taxes. _____
16. Background of craft:
 - a. How prominent was the craft in the past. _____
 - b. Do you think the industries have good market why? _____
 - c. What is the present as compare with the earlier state? _____
17. Is it a seasonal occupation? Why? _____
18. Any folklore dominating the craft. _____

II Employment Structure

1 Nature of Employment perennial / seasonal. Ref. Year

- a). if Perennial

- i. Average no of shifts per day _____
- ii Average: no. of worker employed per month _____
- b). if Seasonal:
 - i. Normal season _____
 - ii. Actual season month of operation _____
 - iii Avg. no. of Worker per month _____
- 2. Nature of work time: Full time/Part time _____
- 3. Seasonal work load Normal Season/ Peak Season _____
- 4. Average no of worker employed per month _____
- 5. Actual month of operation _____
- 6. Age structure of the worker in average

7. Age structure of the worker in average:

Table 1 Age structure of the worker in average:							
Age group	No. of Worker	No. of Full-time Worker	Sex		No. of Part-time worker	Sex	
			M	F		M	F
Below – 5.							
15 - 30							
30 – 60.							
Above 60							

8.Type of labour used:

9. Labour used

Table 2: Type of labour used							
Worker	No. of Worker		Distance of worker from site	Previous occupation of worker			Payme nt Cash / kind
	1991	2001		Pry.	Sec.	Tery	
a) Skilled							
b)Partly Skilled							
c) Unskilled							
d) Other							

III Raw material

Table 3: Raw material				
Nature of Raw material	Source: Place & distance	unit & Qty.	How to acquire mode of Transport	Cost of Transport per unit
a.)Semi processed				
b.) Processed				
c.).Any other				

IV Fuel Consumed Ref. Year

Table 4: Fuel Consumed Ref. Year							
Item	Total Quantity Consumption	Peak demand (Rs.)	Value	Source of Supply Place & dist. Km	Mode of Transport	Cost of Transport	Total
Coal							
Firewood							
Electricity							
Lubricant							
Water							
Other							

V. Nature of Total Product Manufactured

- a. Value of Product
- b. Nature of sale
- c. Output and Commodity Flow
- d. Annual Capacity:-
 - i. Disposal
 - ii. Total sales Quantity
 - iii. Total sale value
 - iv. Place name and Quantity.
 - v. Dist in Km.
 - vi. Mode of Transport

- vii. Total Cost of Transport/Week
- viii. Other disposal
- ix. Self-consumption
- x. Waste
- xi. Other

VI Assessment of asset

Table 5: Assessment of Fix Capital asset	
Fix Capital	Quantity value Rent if hired
a. Land	
b. Building	
c. Plant & Machine	
d. Other fix Capital	
e. Repairing	

Table 6 Assessment of Working Capital asset	
Working Capital	Quantity value Rent if hired
a. Material, stores fuel etc in stock	
b. Stock of product & by-product	
c. Cash in Hand & in Bank (net amount receivable)	
d. Loan in advances	
e Out standing Credit	

VII. a. Source of finance

- i) Self finance in rupees, ii) Partner ,iii) Mahajan, iv) Customer advance,
- v. Bank loan, v. Middleman, vi. Other agencies, vii. Location , viii. Purpose amount, ix. Duration, x. Proportion, xi. Rate of interest(Fix /actual), xii Term & condition, xiii. any security.

VIII. Factor which influences

- i. Less supply of raw material
- ii. Less capital
- iii Do you have extra capacity?
- iv. If so, how much extra you are capable to produce
- v. Have you produce beyond your capacity?

If so how much.

If you are given capital, subsidy or other facilities how will you organize your industry

vii. any technological improvement known to you for this type of unit?

a. If yes why are you not adopting that?

b. If not, are you interested to avail training and other facilities in this lines?

c. What are the three most important problem you face :

d. Can you give some suggestion that how these craft can be improve

e. In case you feel that your enterprise is not doing good business, do you think that some cooperative effort can improve the situation ? Yes/ No

f. If Yes, How What type of member you would like ? Same community/ educated/ financially sound/ Any other remarks

Table 7 Factor which influence

Factors	present location	other activity	Reasons
Ancestral influence			
Historical inertia			
Supply of raw material			
Demand of produce			
Proximity of market			
Labour supply skilled			
Labour supply unskilled			
Heap fuel/power/water			
Cheap labour			
Favorable climata			
Availability of capital			
Market mechanism			
Transport facilities			
Govt. initiation			
Other			

APPENDICES –III
SURVEY QUESTIONNAIRES

(Performa on Survey_of Artisan Household)

- I. Family Type: Single person/Nuclear/Joint/ Extended _____
 II. Details of Family members _____

Table 1: Details of Family members:									
S.No	Family Members	Age	Sex	Relation with Head of family	Education or Dependent	Status Martial	Occupation Main/ Subsidiary	Place of Work	Income per month
			M/F						
1									
2									
3									
4									

III Income Pattern: Land Holding

Table 2: Income Pattern: Land Holding						
S.No	Type	Area Owned in acre	Single Crop in	Double Crop in	irrigated in acre	Non-irrigated area
1						
2						
3						
4						

IV. Cost of Cultivation

Table 3: Cost of Cultivation						
S.No	Seed	Fertilizer	Taxes	Power use	Family labour	Hire labour
1						
2						
3						
4						
5						

V. Agricultural Practice

Table 4: Agricultural Practice:		
Name of Crop	Month/ in acre	Purpose
Season		
Area		
Self utilization		
Exchange		
Sale amount	Physical	
	Value	
Amount value	(In Rs)	(In Qnty.)
Traditional/ H.Y. V		
Total Production		

VI. Live Stock

Table 5: Live Stock					
S.No	Type of Domestic	Number owned	Milking animal	Total Cost	Self use
1					
2					
3					

VII. Forest Collection

Table 6: Forest Collection:	
Questionnaires	Details
Item	
Season.	
Self Utilization	
Sale	
To whom Sold	
Amount Value	

VIII. Other Casual work

- i. Horticulture, ii. Road building, iii. Agriculture labour, iv. Factory worker, v. Business Service, Any other. Monthly: Earning (in value)

IX. Details about saving

- i. Amount, ii Purpose, iii. In kind / . in cash, iv. Where saved:- Post office, Bank, L.I.C any other, iv Indebtedness:- a. Source... b. Amount... c. Cause

X. Expenditure Table

Expenditure Pattern	Monthly value	Yearly value
Food		
Cloth		
Dwelling		
Fuel & light		
Medicine		
Entertainment		
Drink		
Festival		
Traveling		
Rent		
Loan		
Purchase of news paper		
Other purchase Other		

XI. Housing Condition

- i. When Constructed _____
- ii. House type Kucha pacca _____
- iii. Wall material _____
- iv. No. of room _____
- v. Shed for animal Y/N _____
- vi. Water supply _____
- vii. Sanitation _____
- viii. Electricity Available/ not available _____
- ix. Street light Y/N _____
- x. School facilities _____
- xi. Medical facilities _____

XII. Marketing/ Shopping:

- | | |
|-----------------------|------------------------|
| 1. Place of marketing | 5. Major item purchase |
| 2. Distance in km | 6. Frequency of visit |
| 3. Mode of travel | |
4. Cost of travel