Area and Issue

Profile

of Darjeeling

and Sikkim

Area and Issue Profile of Darjeeling and Sikkim

AREA AND ISSUE PROFILE OF DARJEELING

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Darjeeling, General and Physical aspects.

The Darjeeling district derives its name from its headquarters, which, in its turn, is named after Dorje-ling, the

Geographical location of Darjeeling and its headquarters

Name of the district	Latitude		Longitude		Name of district head quarters	Latitude	Longitude
	"N"	"S"	"E"	"W"			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Darjeeling	27°.13'	26°.31	88°.53'	87°.59'	Darjeeling	27°.31'	88°.16'
	N	N	E	E		N	E

Source: District Census Hand Book, 1961

Buddhist Monastery that once stood on the Observatory Hill overlooking Mall, the nerve centre of the town. The name Darjeeling thus appears to be a corruption of Dorjeling-ling meaning place, and dorje standing for the ecclesiastical sceptre or the double head thunderbolt, which the Lama holds in his hand during service, rested. 'In Tibet the word vajrah became dorje and as time went on it became on of the most common of all the emblems associated with priestly power. It is almost always to be found among the objects on the altars in the temples."

Darjeeling, is located between 27°16'05" and 26°27'10" North Latitude and 88°53'00" and 87°59'30" East Longitudes (the boundary limits have undergone minor changes and so the figures given here-taken from the Gazeteer of Darjeeling, may not tally with the figures from the District Statistical handbook-table above). It roughly resembles an inverted wedge with its base resting on Sikkim, its sides touching Nepal, Bhutan and the Jalpaiguri district of West Bengal while its apex projects into the Purnea district of Bihar West Dinajpur district of West Bengal, and Bangladesh (Gazeteer of Darjeeeling, West Bengal)

History

The present district of Darjeeling is a creation of the nineteenth century and is a result of almost accidental involvement of the British Indian Government in the affairs of the neighbouring Himalayan States. In 1817, the East India Company struggled with a Himalayan State on behalf of the Raja of Sikkim and restored to him the whole of the country between Mechi and the Tista rivers. This was the result of the Treaty of Titaliya of 1817.

Under the above treaty the Raja was bound to refer to the arbitration between his subjects and those of neighbouring states. Ten years after it was signed, disputes on the Sikkim Nepal frontiers arose and were referred to the Governor General. Two officers, Captain Lloyd and Mr. Grant were deputed in 1828 to deal with the disputes and they penetrated into the hills as far north as Rinchinpong (in the Kulhait valley in Sikkim). Lloyd spent six days in February 1929 in "the Gorkha station in Darjeeling" and was attracted by its advantages as a site for a sanatorium." Darjeeling was at that time a large village and the residence of one of the principal Kazis.

Mr. Grant reported accordingly to the Governor General Lord William Bentick the numerous advantages promised by a sanatorium at Darjeeling and also recommended its occupation for military purposes. The Governor-General then deputed Captain Herbert, the Deputy Surveyor-General, to examine the country with Mr. Grant, and, in due course, the Court of Directors approved the project. General Lloyd was directed to open negotiations with the Raja on the first convinient occasion. He succeded in obtaining the execution of a deed grant by the Raja of Sikkim on 1st February 1835 The deed ran as follows:

"The Governor General, having expressed has desire for the possession of the hill of Darjeeling on account of its cool climate, for the purpose of enabling the servants of his Government suffering from sickness, to avail themselves of its advantages, I, the Sikkimputtee Rajah hereby present Darjeeling to the East India Company, that is , all the lands south of the Great Rangit river, east of the Balasun, Kahail and Little Rangit rivers and west of Rungpa and Mahanadi rivers."

This was an unconditional cession of what was then an uninitiated mountain. After the cession, General Lloyd and Dr. Chapman were sent in 1836 to explore and investigate the climate and the capabilities of the place. They spent the winter of 1836 and part of 1837 doing this, and when it was finally decided to develop the site as a sanatorium, General Lloyd was appointed Local Agent to deal with applications for land, which began to pour in from residents of Calcutta. Progress was rapid, whereas in 1836 General Lloyd and Dr. Chapman had found only a few huts erected by the Raja of Sikkim, by 1840, road was made from Pankhabari; there was a staging bungalow there and Mahaldiram; a hotel was started at Kurseong and another at Darjeeling; and at Darjeeling 20 private houses were erected and nearly as many 'locations' or building sites had been taken up at Lebong. The rest of the ceded areas were however, and practically uninhabited.

In 1839, Dr. Campbell of the Indian Medical Service, British Resident in Nepal, was transferred to Darjeeling, an inaccessible tract of forest with scanty population. He converted it into an excellent sanatorium and improved the communication system. Several European houses with a bazar, a jail and buildings for the accommodation of the sick were built around 1849. A simple system of administration of justice, well adapted to the character of the local tribes, was also introduced. There was experimental cultivation of tea and coffee and introduction of various European fruits.

Thereafter, there was an internal rebellion by Lamas and other leading men of Sikkim. A primitive expedition was sent by the British in February 1850. This expedition remained on the north bank of the Great Rangit river for a few weeks. This was followed by annexation of the Terai (foothills of the Himalayas) and the position of Sikkim Hills bounded by the Rammam and the Great Rangit rivers on the north, by the Tista on the east and the Nepal frontier on the west. This area of 640 Sq. miles (1657.60 Sq. km) was attached to Darjeeling.

The Terai and the hill territory annexed from Sikkim were managed by the Superintendent, who from 8t^{h} May 1850, was called the Deputy Commissioner. The change was welcomed by the inhabitants who had to pay only small fixed sums to the treasury of Darjeeling, instead of having to meet uncertain and fluctuating demands in kind and calls for personal service made by the Raja and Dewan.

After the annexation, the British territory in Darjeeling was continous with the British districts of Purnea and Rangphu in the plains, and the Sikkim Raja was at off from access to the plains except through British territory. Subsequently there some Sikkimese raids on British Territory, as a result of which Dr. Campbell with a small fornce crossed the Rammam in November 1860 and advanced as far as Rinchenpong. Later other British officers joined with force and entered Tumlong the Captial of Sikkim in March 1861. The Raja of Sikkim abdicated in favour of his son, with whom, on 28th March, a treaty was made which was of particular importance to Darjeeling because it finally put an end to frontier troubles with Sikkim and secured full freedom for commerce across the Sikkim border. By a treaty in November 1865 what is now Kalimpong subdivision was ceded to the British. The Kalimpong area was first notified as subdivision under the Deputy Commisioner of Western Dooars district. But in 1866, it was transferred to Darjeeling. With this change the Darjeeling District reached its present shape. This was an epoch in the history of the district. Peace was established and development of the area systematically started.

After Kalimpong had been brought under British Administrator the district was divided into two subdivisions; the head quarters sub-division with an area of 960Sq miles (2,486.40) including all the hills on both sides of the Teesta and the Terai subdivision with an area of 247Sq miles (709,66 Sq Km). The headquarters of the Terai subdivision was at Hanskhawa near Phansidewa from 1864 to 1880. Thereafter it was transferred to Siliguri. Then the metre-gauge railway of the North Bengal State Railway was extended to Siliguri, which, at that time in the Jalpaiguri district, was transferred to Darjeeling district with a small surrounding area and made the headquarter of the Terai subdvision.

In the mean time Kurseong had begun to develop and in 1891 it was made the headquarter of a new subdivision, which included both the Terai and the lower hills West of the Teesta. Later in 1907, Siliguri was made a subdivision, thus reestablishing the Terai subdivision, which had in 1891 been absorbed into the Kurseong subdivision.

Kalimpong in the mean time had been the Sadar sub-division with a Manager of the Khas Mahals working at Kalimpong the Deputy Commissioner-the police work being controlled by an Inspector. In 1917, the Kalimpong subdivision was created as preliminary to working out development schemes in Kalimpong areas.

The district was included in the Rajsahi Division until October 1905, when, as a result of the partition of Bengal, it was transferred to the Bhagalpur Division with the rearrangement of the provinces it was transferred to the Rajsahi Division in March 1912.

The Partition of Bengal in August 1917 left the boundaries of the district intact and in the share of West Bengal. The district was placed thereafter in the Presidency division.

The freedom movement in the district was much tempered by its moderate political ideology. One outstanding incident connected with the "terrorist movement" was the attempt on the life of Sir John Anderson, the Governor of Bengal, at the Lebong Race Course on May 8th, 1934 by Bengali "terrorists". The district with the rest of India attained independence with the rest of India attained independence as part of India in August 1947.

Source: Gazetteer of India, West Bengal, Darjiling.

Rainfall and Climate

It is said that there are only two seasons in Darjeeling viz. winter and the monsoons, because they are the longest and most prominent seasons. The monsoons begin somewhere around June second week and lasts till the first week of September first week. A brief autumn is experienced after the cessation of the monsoons but somewhere around the first week of November the winter starts and lasts for the three months that follow. So it is seen that spring and autumn is experienced for a brief period of time only

The winters in Darjeeling is known for their severeness and the monsoons for the incessant rains and landslides that follow. During the early days i.e. 1980's the winters in Darjeeling were known for the snowfall but today it has become a reminiscent thing of the past. These days the snow falls after every six or seven years. The recent snowfall was five or six years ago.

1998 recorded the highest annual rainfall of 3474 mm. The maximum rainfall was recorded in July 997mm whereas the normal is 758 mm. The average rainfall for the year (1998) is 289.5, which is higher than the normal average of 235.75.

In 1999, the highest recorded rainfall was for August, which was 1013 mm, exceeding the normal of 613mm. On the other hand January, February and March were abnormally dry. January recorded 3mm the normal being 10 mm. Similarly February 0 (normal 21mm) and March 1mm (normal 38mm).

For the last 10 years the highest recorded rainfall was for the year 1991, 3893mm. The month when it rained the most was in June, 1169mm, which is also the highest recorded for any other month.

Monthly Rainfall in the district of Darjeeling Centre:Darjeeling

Millimetres

Month/Year	Normal	ACTUAL 1995	1996	1997	1998	1999
(1)	(2)	(3)	(4)	(5)	(6)	(7)
January	10	15	51	27	1	3
February	21	16	7	19	6	0
March	38	32	32	31	138	1
April	85	19	76	116	237	42
May	204	136	176	164	166	274
June	544	712	438	452	506	695
July	758	981	827	756	997	683
August	613	584	643	749	928	1013
September	404	423	343	546	352	364
October	133	129	96	28	131	224
November	13	222	2	7	12	17
December	6	19	0	71	0	7
Total for the year	2829	3288	2691	2966	3474	3323

Source: Meteorological Department, Govt of India

Temperature-Centre: Kalimpong.

In 1999, June was the warmest month recording a Mean Maximum of 27°C and Mean Minimum of 26°C the variance being 1°C.

Severe cold seems not to have been experienced in 1999, as the Minimum temperature for November, December and January (the coldest months i.e. winter) ranged from 12°C to 14°C (One must take note that Kalimpong has a warmer climate than that of Darjeeling)

The year 1999 recorded the hiughest Min Max of 29°C in August but at the same time, it has recorded a Mean Min of 15°C, giving a variation of 14°C. In the previous 2 years the variation has ranged between 1-2°C.

Mean Maximum and Mean Minimum Temperature in the District of Darjeeling Centre:Kalimpong

in degree Celsius

Month	1995 Mean Maximum	1995 Mean Minimum	1996 Mean Maximum	1996 Mean Minimum	1997 Mean Maximum	1997 Mean Minimum	1998 Mean Maximum	1998 Mean Minimum	1999 Mean Maximum	1999 Mean Minimum
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
January	11	6	"	"	"	"	11	"	13	12
February	13	8	"	"	"	"	13	"	13	"
March	18	12	"	"	"	"	15	"	23	"
April	24	18	"	"	"	"	23	"	25	"
May	26	20	"	"	24	16	24	16	22	"
June	24	19	"	"	23	18	25	18	27	26
July	"	"	"	"	24	20	"	20	"	"
August	"	"	"	"	24	22	23	22	29	15
September	"	"	"	"	22	21	24	21	21	18
October	"	"	"	"	20	18	18	18	21	16
November	"	"	"	"	"	14	16	14	"	14
December	"	"	"	"	20	13	14	13	14	12

"=not available

Source: Meteorological Department, Govt of India

Judging from the past records, it is seen that the records for the Minimum temperatures have risen whereas the records for the Max temperature have remained consistent.

Area and Population

Provisional Population of Darjeeling Dist. 2001				Rank from Highest to Lowest
Block/Municipality	Male	Female	Total	
Bijanbari	58,451	57,370	115,821	5
Rangli-Rangliot	32,267	32,029	64,296	11
Kalimpong I	34,344	33,328	67,672	10
Kalimpong II	31,276	28,940	60,216	2
Gorubathan	27,570	26,705	54,275	13
Jorebungalow/Sukhiapokhri	49,708	50,966	100,674	7
Mirik	21,095	21,135	42,230	15
Kurseong	42,976	42,133	85,109	9
Matigara	66,565	60,139	126,704	4
Naxalbari	75,833	69,109	144,942	3
Phansidewa	87,897	83,487	171,384	2
Kharibari	45,472	42,734	88,206	8
Darjeeling Municipality	52,721	53,536	106,257	6
Cantonment Board, Lebong	166	174	340	19
Cantonment Board, Jalapahar	438	495	933	18
Kalimpong Municipality	22,331	20,649	42,980	14
Mirik Municipality	4,629	4,550	9,179	17
Kurseong Municipality	20,468	19,599	40,067	16
Siliguri Municipality	152,127	132,488	284,615	1
Total	**826,334**	**779,566**	**1,605,900**	

Source: Census of India 2001, West Bengal. Provisional Population totals

The Provisional Population figures of Darjeeling 2001 shows that the concentration of population is the highest in the plains with Siliguri Ranking no one, Darjeeling Municipality ranks 6th highest preceded by Bijanbari 5th. The least populated area is the Cantonment Board Lebong.

Area, Population, Decennial Growth Rate and Density for 1991 and 2001 at a glance for West Bengal and the Districts (Darjeeling).

The table Area, Population, Decennial Growth Rate and Density for 1991 and 2001 shows that the Decennial growth rate (in percent) from 1981 to 1991 for Darjeeling has been 26.91% whereas there has been a decrease in the decennial growth rate from 1991 to 2001 the figure standing at 23.54%. The Decennial growth rate of female has been slightly higher 18.93% and males 16.83 from 1991 to 2001.

There has been a increase in density i.e. Population per sq. km also. 413 for the year 1991 and 510 for 2001.

Area, Population, Decennial Growth Rate and Density for 1991 and 2001 at a glance for West Bengal and the Districts

District	Area Sq.km	Population 1991			Population 2001		
		P	M	F	P	M	F
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
West Bengal	88,752	68,077,965	35,510,633	32,567,332	8,021,171	41,487,694	38,733,477
Darjiling	3,149	1,299,919	679,323	620,596	1,605,900	826,334	779,566

District	Decennial growth rate (%) 1981-2001		Population density per Sq.km	
	1981-1991	1991-2001	1991	2001
(1)	(9)	(11)	(12)	(13)
West Bengal	24.73	17.84	767	904
Darjiling	26.91	23.54	413	510

Source: Census of India 2001, Provisional Population Totals (paper-1 of 2001)

The table (District Wise Population Growth Rate) shows that the district of Darjeeling ranks 17th in the year among the districts in terms of Population size. In 1991, it ranked 12th and then 15th in the year 2001 in terms of Percentage of decadal growth rate, which shows that there has been a decrease in the decadal growth.

District wise population growth rate

Rank in 2001	Name of the District	Percentage of total State Population	Percentage of total land area of the State	Population density per Sq.km.
	West Bengal	100	100	904
17	Darjeeling	2.00	3.55	510

Rank from lowest to highest	Name of the District	Percentage of decadal growth rate		Rank from lowest to highest
2001		1991-2001	1981-1991	1991
15	Darjeeling	23.54	26.91	12

Source: Census of India 2001, Provisional Population Totals, West Bengal.

From the period between 1901 to 2001 the highest decadal growth for the district was during 1951-1961 which stands at 35.90 %, for the state also that period was the highest with 32.80%. Before the year 1951 the decadal growth rate has been lower than 20% but from the year 1951 onwards there has been a sudden percentage decadal growth or in other words a boom in population, which is very alarming. But when we compare the years 1911-1921 and 1921-1931 the percentage decadal growth has doubled itself form 5.12 to 12.95 which is very alarming considering the fragile ecosystem of the hills which means pressure on resources. From 1921 onwards the growth rate then has been rapid at an alarming rate. There has been a decrease from 1991-2001 with 23.54%.

Between the years, 1911-1921 there has been a negative growth, this could be because of the Bengal famine that affected the plains, Darjeeling seems not to have been affected much by the famine.

On an average the percentage decadal growth rate of Darjeeling seems to be higher than that of the state except for the years 1931-1941. This is a very alarming factor considering the fragile ecosystem of the hills, which, unlike the plains cannot sustain large populations that exert pressure on the resources.

Percentage decadal variation in population since 1901 for West Bengal and the Districts

State/District	Percentage decadal variation				
	1901-1911	1911-1921	1921-1931	1931-1941	1941-1951
(1)	(2)	(3)	(4)	(5)	(6)
West Bengal	6.25	-2.91	8.14	22.93	13.22
Darjeeling	5.31	5.12	12.85	17.72	17.58

State/District	Percentage decadal variation				
	1951-1961	1961-71	1971-1981	1981-1991	1991-2001
(1)	(7)	(8)	(9)	(10)	(11)
West Bengal	32.80	26.87	23.17	24.73	17.84
Darjeeling	35.90	25.16	31.02	26.91	23.54

Source: Census of India, 2001, Provisional totals, West Bengal.

According to the table Ranking of Districts by population 1991 and 2001, the ranking of Darjeeling among the districts in the state in terms of population in terms of population density has not changed. This means although the population density has changed, the ranking in relation to other districts has not changed.

Ranking of Districts by population in 1991 and 2001

Rank in 2001	District/State	Population Density 2001	Population Density 1991	Rank in 1991
	West Bengal	904	767	
16	Darjeeling	510	413	16

Source: Census of India, 2001, Provisional totals, West Bengal.

Area and Population & Density of Population in the District of Darjeeling

Sub-Division/C.D. Block/ M/N.a	Area in Sq. km	Population (number)	Density per Sq.km	P.C. of population to district population
(1)	(2)	(3)	(4)	(5)
Darjeeling Sub-Division	915.09(P)	347912	380(P)	20.76
Darjeeling Pulbazar	212.71	117196	551	9.01
Rangli-Rangliot	305.83	65342	214	5.03
Jorebungalow-Sukhiapokhri	385.98	92312	239	7.10
Darjeeling (M)	10.57	73062	6912	5.62
Kalimpong Sub-division	1074.81(P)	190266	177(P)	14.64
Kalimpong I	321.16	53641	167	4.13
Kalimpong II	303.00	51411	170	3.95
Gorubathan	441.97	46382	105	3.57
Kalimpong (M)	8.68	38832	4474	2.99
Kurseong Sub-Division	435.14 (P)	146640	337(P)	11.28
Kurseong	326.5	78859	241	6.07
Kurseong (M)	5.05	26758	5299	2.06
Mirik	97.09	34001	350	2.61
Mirik (N.A.)	6.50	7022	1080	0.54
Siliguri Sub-division	863.58 (P)	61501	712(P)	47.32
Matigara-Naxalbari	367.98	194094	527	14.93
Kharibari-Phansidewa	480.06	204057	425	15.70
Siliguri(M)	15.54	216950	13961	16.69
District	3149.00	1299919	413	100.00

(M) - Municipality Source Census of India 1991

According to the 1991 Census, 69.53% of the total Population is rural and 30.47% is Urban. The percentage of male population is 52.6% and the percentage of female population is 47.7%. The reason for this is because of the gender bias that exists in the hills, which is more vivid in the rural area. Because of the patriarchal form of society, more preference is given to the male child than the girl child.

Among the three hill sub-divisions Darjeeling has the highest density of population (380 Sq.km). The Largest concentration of Population seems to be in the town itself where the density is 6912 Sq. km. The population density in Siliguri Municipality is 13961km^2.

The subdivision of Siliguri seems to be the most populated as it contains 47.32 % of the entire population of the district. Darjeeling follows next containing 20.76% of the population, Kalimpong 14.64 %, Kurseong 11.28%.

Growth of Population by Sex and Year (District)

Growth of Population by sex and Year in the District of Darjeeling

Number

Year	Total Population	Index with 1901 as base	Male	Female	No. of Female per 100 males	Urban	Rural	P.C. of rural population to total population
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1931	3320161	125	176551	155510	88	43749	288582	86.91
1941	37639	147	199891	176478	88	58167	318202	84.55
1951	459617	173	246738	212879	84	94481	365136	79.44
1961	624640	235	335036	289604	86	144637	48003	76.84
1971	78177	294	415442	366335	88	180212	601565	76.95
1981	1024269	385	542567	481702	89	282153	742116	72.45
1991	129919	489	679323	620596	91	396060	903859	69.53

Source: Census of India

The sex ratio had decreased between 1941-1951. In 1951, sex ratio was 84:100; it has increased to 91 females per 100 males in 1991. This is a good sign, but it should be remembered that although the gender bias among males and females is lesser in the urban areas this bias still exists in the rural areas, where, more preference is given to the male child in terms of food, education etc. And besides, the factors such as female infant mortality rate, and death during birth are also responsible for the lower female population (See Health).

The percentage of rural population has gradually declined across the years. This would be mainly because of migration from rural to urban areas for employment.

Distribution of Rural and Urban Population by Sex in the District, 1981

Distribution of Rural and Urban Population by sex in the District of Darjeeling, 1981

(Number)

Sub-Division/Police station/M	Rural			Urban		
	Male	Female	Total	Male	Female	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Sadar Sub-Divison	11359	110150	223743	30932	26671	57603
Sukhiapokhri	14778	14197	28975	-	-	-
Pulbazar	23171	21575	44746	-	-	-
Darjeeling	23413	23355	46768	-	-	-
Darjeeling(M)	-	-	-	30932	266671	57603
Rangli-Rangliot	26006	25219	51225	-	-	-
Jorebungalow	26225	25804	52029	-	-	-
Kalimpong Sub-Division	65595	60713	126308	17112	15306	32418
Kalimpong	46432	43231	89663	-	-	-
Kalimpong (M)	-	-	-	14954	13931	28885
Gorubathan	19163	17482	36645	2158	1375	3533
Kurseong Sub-Division	44119	38137	82256	15205	13841	29046
Kurseong	29305	25531	52836	5802	5236	11038
Kurseong(M)	-	-	-	9403	8605	18008
Mirik	14814	14606	29420	-	-	-
Siliguri Sub-Division	164039	144770	309809	90972	72114	1603086
Naxalbari	38566	33901	72467	4898	3810	8708
Siliguri	42305	35927	78232	-	-	-
Siliguri (M)	-	-	-	86074	68304	154378
Phansidewa	56863	50601	107464	-	-	-
Kharibari	27305	24341	51646	-	-	-
District	388346	353770	742116	154221	127932	282153

continued...

According to the 1981 census, 72 %of the population still lived in rural areas.
The sex ratio for Siliguri Sub-Division per 100 males is: -

	Rural	Urban
Siliguri sub-division	87	79
Naxalbari	87	78
Siliguri	84	-
Siliguri (M)	-	79
Phansidewa	88	-
Kharibari	89	-

Sex Ratio for the District-83: 100

The sex ratio in urban Gorubathan seems to be the lowest. It has been recorded at 63 females for every 100 males. Even for rural Kurseong, the sex ratio is 80 females for every 100 males which is low compared to the District figures.

Compared to the sex ratio in the rural areas, the urban sex ratio is low (except for the Kurseong sub-division-Urban 91:100, Rural 86:100).

Females comprise of 47.67% of the rural population in the District. In the urban areas, they comprise of 45.34% of the urban population.

The percentages of rural population in the following sub divisions are:

- Sadar Sub-Division-80% (approx)
- Kalimpong Sub-Division-80% (approx)
- Kurseong Sub-Division-74% (approx)
- Siliguri Sub-Division-66% (approx)

continuation... Number

Sub-Division/Police station/M	Total		
	Male	Female	Total
(1)	(8)	(9)	(10)
Sadar Sub-Divison	144525	136821	281346
Sukhiapokhri	14778	14197	28975
Pulbazar	23171	21575	44746
Darjeeling	23413	23355	46768
Darjeeling(M)	30932	26671	57603
Rangli-Rangliot	26006	25219	51225
Jorebungalow	26225	25804	52029
Kalimpong Sub-Division	82707	76019	158726
Kalimpong	46432	43231	89663
Kalimpong (M)	14954	13931	28885
Gorubathan	21321	18857	40178
Kurseong Sub-Division	59324	51978	111302
Kurseong	35107	28767	63874
Kurseong(M)	9403	8605	18008
Mirik	14814	14606	29420
Siliguri Sub-Division	256011	216884	472895
Naxalbari	43464	37711	81175
Siliguri	42305	35927	78232
Siliguri (M)	86074	68304	154378
Phansidewa	56863	50601	107464
Kharibari	27305	24341	51646
District	**542567**	**481702**	**1024269**

Source: Census of India, 1981

Distribution of Rural and Urban Population by sex in the District of Darjeeling, 1991

The percentage of rural population in the sub-divisions are as follws:

- Darjeeling-79%
- Kalimpong-78%

- Kurseong-68%
- Siliguri-62%

The sex ratio (per 100 males) in the different sub-divisions and their blocks are as follows: -

	Rural	Urban
Darjeeling Sub-division	97	93
Darjeeling/Pulbazar	95	-
Jorebungalow/Sukhiapokhri	99	-
Rangli-Rangliot	96	-
Darjeeling (M)	-	93
Kalimpong Sub-division	93	94
Kalimpong I	95	-
Kalimpong II	91	-
Gorubathan	92	85
Kalimpong (M)	-	94
Kurseong Sub-Division	94	92
Mirik	95	93
Kurseong (M)	92	-
Kurseong Sub-division	94	92
Kurseong	95	93
Mirik	92	-
Kurseong (M)	-	91
Mirik (N.A.)	-	96
Siliguri Sub-Division	91	83
Matigara/Naxalbari	91	85
Kharibari/Phansidewa	91	-
Siliguri (M)	-	82
District on the Whole	93	87

There could be many reasons for a lower sex ratio in the urban areas. Among them are: -

- The female infant mortality rate in the urban areas is higher than in the rural areas.
- Migration from rural to urban areas takes place usually for men, whereas the womenfolk stay back.

Distribution of population in the district of Darjeeling by age group

The largest number of people belongs to the age group between 30-39 in the rural areas. They amount to 13.53 of the total rural population. However, there is somewhat an equal distribution of population in the rural areas of people belonging to these age groups:

Age group in years	% (1991)	(1981) Urban+ Rural
0-4	11.58	11.3
5-9	13.47	12.6
10-14	12.69	12.9
15-19	10.02	11.2
20-24	9.35	10.5
25-29	9.14	8.9
30-39	13.53	12.5

Distribution of Population in the district of Darjeeling by age group 1991

(in thousand)

Age group (years)	Rural					
	Male		Female		Total	
	No.	P.C.	No.	P.C.	No.	P.C.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
0-4	52.8	11.30	51.9	11.89	104.7	11.58
5-9	62.6	13.39	59.1	13.54	121.7	13.47
10-14	58.3	12.47	56.4	12.92	114.7	12.69
15-19	45.6	9.78	45.0	10.31	90.6	10.02
20-24	41.5	8.88	43.0	9.85	84.5	9.35
25-29	40.5	8.67	42.1	9.64	82.6	9.14
30-39	64.5	13.80	57.8	13.24	122.3	13.53
40-49	43.0	8.99	35.7	8.18	77.7	8.60
50-59	30.0	6.42	23.6	5.41	53.6	5.93
60 Above	27.5	5.88	20.2	4.63	47.7	5.28
Age not stated	2.0	0.42	1.7	0.39	3.7	0.41
All ages	467.3	100.00	436.5	100.00	903.8	100.00

Distribution of Population in the district of Darjeeling by age group 1991

(in thousand)

Age group (years)	Urban					
	Male		Female		Total	
	No.	P.C.	No.	P.C.	No.	P.C.
(1)	(8)	(9)	(10)	(11)	(12)	(13)
0-4	16.2	7.64	15.9	8.64	32.1	8.10
5-9	21.8	10.28	20.1	10.92	41.9	10.58
10-14	23.0	10.85	22.1	12.00	45.1	11.39
15-19	22.1	10.43	20.4	11.08	42.5	10.73
20-24	21.8	10.28	20.3	11.03	42.1	10.63
25-29	19.8	9.34	19.8	10.76	39.6	10.00
30-39	35.5	16.75	28.7	15.59	64.2	16.21
40-49	23.9	11.27	16.5	8.36	40.4	10.2
50-59	14.8	6.98	9.8	5.32	24.6	6.21
60 Above	12.4	5.85	9.8	5.32	22.2	5.60
Age not stated	0.7	0.33	0.7	0.38	1.4	0.35
All ages	212.0	100.00	184.1	100.00	396.1	100.00

Source: District Statistical Handbook 1991

One thing clearly visible from the table is that there is a larger % of females till the age of 29.

Age Group	Male%	Female%
0-4	11.30	11.89
5-9	13.39	13.54
10-14	12.47	12.92
15-19	9.78	10.31
20-24	8.88	9.85
25-29	8.67	9.69

The population belonging to these age group comprises 66.24% of the entire population. 68% of the female population falls within these age groups i.e. 33% of the entire rural population

Between the following age groups the distribution of rural population between the sexes is as follows:

Age Group	Male	Female
30-39	13.80	13.24
40-49	8.99	8.18
50-59	6.42	5.41
60 Above	5.88	4.63

The population between these age groups comprises of 33.34% of the entire population.

The female population consists of 45.56% of this population, which is 31.46% of the entire female and rural population and 15.19% of the entire rural population (male and female) 18% of the population in these age groups consists of males.

These figures reveal that abour 66% of the entire rural population is either young or belonging to the working class. Also that 81% of the female population is below 39 years of age.

Urban 1991

In the urban areas, a greater amount of the population falls between these age groups:

5-9	10.58
10-14	11.39
15-19	10.73
20-24	10.63
25-29	10.00
30-39	16.21
40-49	10.20

This reveals that the largest percentage of people fall in the age group of 30-39. Moreover, as compared to the rural areas the percentage of new-born is a little low (8.1%).

It is also noticed that in the urban areas, the population within the age groups of 15-19, 20-24, 25-29, 30-39 and 40-49 occupy a higher percentage in the urban population than in the rural areas.

This could be explained by the fact that people from rural areas migrating to urban localities usually belong to these age groups.

Also noticed is the fact that 64% of the urban female population falls between the age groups of 0-4, 5-9, 10-14, 15-19, 20-24, 25-29.

Assumptions

- Maternal mortality rate is high in the urban as well as rural areas.
- Population in the rural areas is on the increase because the concept of family planning hasn't reached these areas.
- As said earlier the gender bias is there both in the rural and urban areas where more preference is given to the male child in terms of nutrition, health, education etc. because of the patriarchal form of society.
- Sex Ratio in the rural areas –93:100

Sex Ratio in the urban areas-87: 100

Growth rate (Entire District)

Year	Growth rate in percent
1901-1911	5%
1911-1921	5.5%
1921-1931	12.85%
1931-1941	22%
1941-1951	22%
1951-1961	35.9%
1961-1971	25%
1971-1981	26.9%
1991-2001	23.5%

Percentage Distribution of Population According to Different Categories of Workers and Non-Workers in the District of Darjeeling.

Kalimpong II has the highest percentage of main workers 40.58% of its total population (5141) consists of main workers.

When the class of main workers, the percentage of cultivators is higher than that of agricultural labourers of the total population of Kalimpong II. Cultivators-29.47% of the total population, Agricultural Labourers-2.35%of the total population of Kalimpong II.

Percentage Distribution of Population according to different categories of Workers and Non-Workers in the district of Darjeeling, 1991

(population in number)

Sub-Division/C.D. Block/M/NA	Total Main Workers		Class of Main Workers			
			Cultivators		Agricultural Labourers	
	Population	P.C.	Population	P.C.	Population	P.C.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Sadar Sub-Division	111464	32.05	28131	8.09	7678	2.21
Darjeeling (M)	18181	24.88	302	0.14	147	0.20
Darjeeling } Pulbazar	43763	37.35	18785	16.03	3325	2.84
Sukhiapokhri } Jorebungalow	30868	33.44	4732	5.13	1963	2.13
Rangli-Rangliot	18652	28.55	4312	6.60	2243	3.43
Kalimpong Sub-Division	68383	39.54	37226	19.57	7299	3.84
Kalimpong (M)	9990	25.73	538	1.39	868	2.24
Kalimpong-I	19877	37.06	12186	22.72	3172	5.91
Kalimpong-II	20863	40.58	15149	29.47	1209	2.35
Gorubathan	17653	38.06	9353	20.17	2050	4.42
Kurseong Sub-Division	46735	31.87	8465	5.77	2354	1.61
Kurseong (M)	6536	24.43	6	0.02	3	0.01
Kurseong	27168	34.45	6360	8.07	1857	2.35
Mirik	11267	33.14	2007	5.90	399	1.17
Mirik (N.A.)	1764	25.12	92	1.31	95	1.35
Silliguri Sub-Division	211666	34.41	34604	5.63	34451	5.60
Matigara Naxalbari }	68637	65.36	11070	5.7	11990	6.18
Kharibari Phansidewa }	70742	34.67	23376	11.46	22240	10.90
Siliguri (M)	72287	33.32	158	0.07	221	0.10
District	438248	33.71	108426	8.34	51782	3.98

continued...

Moreover, the density of population per sq.km in Kalimpong II is second lowest (170 per K.m. Sq). This can be interpreted in the following manner: most of the land is being used for agriculture, and that there are only 1209 people who being employed as agricultural labourers, whereas 2085 people are cultivators.

Compared to the hills, the percentage of agricultural labourers in the sub-division of Siliguri is high, especially in the blocks of Kharibari-Phansidewa where the percentage of agricultural labourers is 10.90. The number of Cultivators is high in the sub-divisions of Kalimpong, namely Kalimpong I, and Kalimpong II. (22.72% and 29.47 respectively) Gorubathan-20.17%.

	Main Workers	Cultivators	Agricultural Labourers
Darjeeling Sub-Division	32.05	8.09	2.21
Kalimpong Sub-Division	35.94	19.57	3.84
Kurseong	31.87	5.77	1.61
Siliguri	34.41	5.63	5.60

Ratio of the Cultivators to Agricultural Labourers in the four Sub-divisions are:-

- Darjeeling-100: 27
- Kalimpong-100: 25
- Kurseong-100: 25
- Siliguri-100: 100
- Siliguri Sub-Division has the largest no of agricultural labourers.

Sub-Division/C.D. Block/M/NA	Class of Main Workers				Marginal Workers	
	House hold industry (Manufacturing Processing)		Other Workers			
	Population	P.C.	Population	P.C.	Population	P.C.
(1)	(8)	(9)	(10)	(11)	(12)	(13)
Sadar Sub-Division	620	0.18	75035	21.57	1920	0.55
Darjeeling (M)	1265	0.36	17467	23.91	142	0.19
Darjeeling } Pulbazar	184	0.16	21469	18.32	503	0.43
Sukhiapokhri } Jorebungalow	85	0.09	24088	26.09	660	0.72
Rangli-Rangliot	86	0.13	12011	18.39	615	0.94
Kalimpong Sub-Division	506	0.27	23352	12.26	1924	1.01
Kalimpong (M)	298	0.77	8286	21.33	120	0.31
Kalimpong-I	100	0.19	4419	8.24	445	0.83
Kalimpong-II	66	0.13	4439	8.63	1206	2.35
Gorubathan	42	0.09	6208	13.38	153	0.33
Kurseong Sub-Division	148	0.1	35768	24.39	866	0.59
Kurseong (M)	67	0.25	6460	24.15	59	0.22
Kurseong	42	0.05	18909	23.98	404	0.51
Mirik	20	0.06	8841	26.01	316	0.93
Mirik (N.A.)	19	0.27	1558	22.19	87	1.24
Silliguri Sub-Division	1448	0.24	141163	22.94	1889	0.31
Matigara	493	0.25	24619	23.23	814	0.42
Naxalbari } Kharibari Phansidewa }	507	0.25	24619	12.06	628	0.31
Siliguri (M)	448	0.21	17460	32.94	447	0.21
District	2722	0.21	275318	21.18	6599	0.51

Source: Districts Statistical Handbook, 1991

Workers: -

Sub Divisions	Marginal	Cultivators	Agricultural Labourers	Household Workers	Others
Sadar	.55	8.02	2.21	.18	21.57
Kalimpong	1.01	19.57	3.84	.77	12.26
Kurseong	.59	5.77	1.61	.10	24.39
Siliguri	.31	5.63	5.60	.24	22.94

Kalimpong II that has the highest percentage of main workers (40.57%) also has the highest percentage of marginal workers (2.35%). Kalimpong Municipality also has the highest percentage of its population involved in Manufacturing/Processing (Household) Industry (.77%) in the District. This can be attributed to historical factors because Kalimpong in the old days used to be a trade center. This also corrobates the fact that the number of self employed is more in the area. (See agriculture also).

Non-Workers:-
Sadar - 67.40%
Kurseong - 65.50%
Kalimpong - 63.05%
Siliguri - 65.28%

Among the blocks, the ones that have the highest percentage of non-workers are: -
Darjeeling Municipality - 74.93%
Rangli-Rangliot – 70.51%
Kalimpong II – 73.96%
Kurseong (M) – 75.35%
Mirik (N.A.) – 73.64%

Kurseong Municipality has the highest percentage of non-workers. Kalimpong II has the lowest percentage of non-workers. This is because Kalimpong used to be a trade center in the old days, and is now more or less a self -sufficient area by itself whereas Kurseong is neither a trade center and nor does it offer employment opportunities like Darjeeling as a headquarter offering more service oriented employment opportunities. In other words it can be safely said that Kurseong is a neglected area.

Darjeeling Sub-Division

Darjeeling Municipality – 24.88% are Main workers, among which .41 are Cultivators, .20 – Agricultural Labourers, .36 – Household Industry Workers and 23.91 Other Workers.
0.19% - Marginal Workers
74.93% - Non-Workers

Around 75% of the population consists of Non-Workers. Among the workers, 23.91% of the population is involved in "other" work sectors. For every 100 cultivators, there are 49 agricultural labourers. The total percentage of population involved in agriculture is .61% only.

Darjeeling/Pulbazar

Total Main Workers - 37.35% among which 16.03% are Cultivators, 2.84 are Agricultural Labourers, .16 Household Industry Workers and 18.32% Other Workers.
.43% - Marginal Workers
62.2% - Non-Workers

The percentage of non-workers is less than in Darjeeeling (M). However, the percentage of marginal workers is a little more.

The percentage of the entire population involved in agriculture is 18.87% and for every cultivator, there are 18 agricultural labourers. This reveals that among the main workers, a more or less equal percentage of the population is involved in agriculture than in other job sectors. The percentage of population involved in the household industry is the least.

Sukhiapokhri-Jorebungalow

Total Main Workers – 33.44% among which 5.13% are Cultivators, 2.13% are Agricultural Labourers, .09% are House Hold Industry workers and 26.09% Other Workers.
Marginal Workers - .72%
Non-Workers – 65.84%

The percentage of the entire population involved in agriculture is 7.26%.. For every 100 cultivators there are 41 agricultural labourers.

Most people are either non-workers or involved in "Other" job sectors.

Rangli-Rangliot

Total Main Workers – 28.55% among which 6.60% are Cultivators, 3.43 are Agricultural Labourers, .13% are Household Industry Workers and 18.39% Others Workers.
Marginal Workers - .94%
Non-Workers – 70.51%

About 1% of the population consists of marginal workers. 10% of the population is involved in agriculture. 18% is involved in other job sectors. All others comprise of non-workers. For every 100 cultivators there are 52 agricultural labourers.

Kalimpong (M)

Total Main Workers – 27.73% among which 1.39 are Cultivators, 2.24 are Agricultural Labourers, .77% are Household Industry Workers and 21.33 % are Other Workers.
Marginal Workers - .31%
Non-Workers – 73.96%

About 74% of the population consists of Non-workers. It has the highest percentage of block population involved in the Household Industry. Only 3.62% of its population is involved in agriculture. 21.33% of the population is involved in "Other" job sectors.

Kalimpong I

Total Main Workers-37.06% among which 22.72% are Cultivators, 5.91% are Agricultural Labourers, .19% are Household Industry Workers and 8.24 Other Workers.
Marginal Workers - .83%
Non-Workers -62.11 %

It has one of the highest percentages of the block population involved in agriculture (28.83%) and has the lowest percentage of block population in "Other" job sectors.

Kalimpong I one is basically an agricultural are. For every 100 cultivators there are 26 agricultural labourers.

Kalimpong II

Total Main Workers 40.58% among which 29.47% are Cultivators, 2.35 are Agricultural Labourers, .13% are Household Industry Workers and 8.63% are Other Workers.
Marginal Workers – 2.35%
Non-Workers – 57.07%

It has the highest percentage of population involved in agriculture – 31.82% and one of the lowest involved in Other job sectors. It also has the lowest percentage of Non Workers. For every 100 Cultivators there are 8 agricultural labourers.

This too, is basically an agricultural area.

Gorubathan

Total Main Workers – 38.06% among which 20.17% are Cultivators, 4.42 are Agricultural Labourers, 0.09% are Household Industry Workers and 13.38 are Other Workers.
Marginal Workers -.33%
Non-Workers - 61.61%

The total percentage of population involved in agriculture is 24.29%. For every 100 Cultivators there are 2 agricultural labourers.

Kurseong (M)

Total Main Workers – 24.43% among which 0.02% are Cultivators, 0.01% are Agricultural Labourers, .25% are Household Industry Workers and 24.15% are Other Workers.
Marginal Workers - .22%
Non-Workers – 75.35%

Very little percentage of the population is involved in agriculture. Most working people are in 'Other' job sectors, and a small percentage consists of marginal workers. It also has the highest percentage of non workers. This could mean that this is quite an unproductive area.

Kurseong

Total Main Workers – 34.45% among which 8.07% are Cultivators, 2.35% are Agricultural Labourers, 0.05% are Household Industry Workers and 23.98% Other Workers.
Marginal Workers - .51%
Non-Workers -- 65.04%

The total percentage of population involved in agriculture is 10.42%. For every 100 cultivators there are 29 Agricultural Labourers.

24% of the population is involved in Other Job Sectors; otherwise 65% of the population consists of Non Workers.

Mirik

Total Main Worker – 33.4% among which 5.09% are Cultivators, 1.17% are Agricultural Labourers, 0.06% are Household Industry Workers and 26.01% are Other Workers.
Marginal Workers - .93%
Non-Workers – 65.93 %

The total percentage of population involved in agriculture is 6.26%. For every 100 Cultivators there are 20 Agricultural Labourers.

Around 1% of the population consists of Marginal Workers and 26% Other Job Sectors.

Mirik (N.A.)

Total Main Workers – 25.12%, among which 1.31% are Cultivators, 1.35% are Agricultural Labourers, .27% are Household Industry Workers and 22.19% Other Workers.
Marginal Workers - .93%
Non-Workers – 65.93%

The total percentage of population involved in agriculture is 2.66%. For every 100 Cultivators there are 103 Agricultural Labourers. This is the only block in the district where the number of Agricultural Labourers is more than the number of Cultivators.

Matigara/Naxalbari

Total Main Workers – 34.41% among which 5.63% are Cultivators, 5.60% are Agricultural Labourers 25% are Household Industry Workers and 23.23% are Other Workers.

Marginal Workers - .42%

Non-Workers - 64.22%

The total percentage of population involved in agriculture is 11.23%. For every 100 Cultivators there are 108 Agricultural Labourers.

Khaaribari/Phansidewa

Total Main Workers – among which 11.46% are Cultivators, 10.90% are Agricultural Labourers, .25% are Household Industry Workers and 12.06% are Other Workers.

Marginal Workers - .31%

Non-Workers – 65.02%

One of the lowest percentages involved in Other Job Sectors.

The total percentge of population involved in agriculture is 22.36%. For every 100 Cultivators there are 95 Agricultural Labourers.

Siliguri (M)

Total Main Workers – 33.3% among which 8.34% are Cultivators, 3.98 are Agricultural Labourers, .21% are Household Industry Workers and 21.18% are Other Workers.

Marginal Workers - .51%

Non-Workers – 66.47%

The total percentage of population involved in agriculture is 12.32%. For every 100 Cultivators there are 140 Agricultural Labourers.

One of the highest percentages of Non Workers.

In the Sub Division of Siliguri, the percentage of Agricultural Labourers is higher than in the other sub-divisions 5.60%.

Even compared to the number of cultivators. the number of Agricultural Labourers is almost equal. On the whole in the sub-division, for every 100 Cultivators there is an equal number of Agricultural labourers as well.

Distribution of Population according to Different Categories of Workers and Non Workers by Sex in the District of Darjeeling.

(A) Main Workers

The rural areas have a greater percentage of male main workers than in the urban areas:

- **Cultivators** – 10% of the rural male population cultivators 7.6% of the rural population are involved in the same work sector.

Sex Ratio – 100:45

[illegible]% of the urban male population are Cultivators.

[illegible]% of the urban female population are cultivators.

Sex Ratio – 100:15

Greater percentage of the population (11.85%) is involved as cultivators in the rural areas than in the urban areas [illegible]2%)

- **Agricultural Labourers** – a greater percentage of the population (5.54%) are involved as Agricultural Labourers in the rural areas than in the urban areas (.43%)

7.59% of the rural male population are Agricultural Labourers.

3.4% of the rural female population are Agricultural Labourers.

Sex Ratio – 100:42

.6% of the male population are Agricultural Labourers

[illegible] of the female population are Agricultural Labourers.

Sex Ratio – 100:37

- **Household and other than household (manufacturing processing)**

[illegible] of rural male population are Household Industry Workers

[illegible]% rural female population are Household Industry Workers

[illegible]

[illegible] population are Household Industry Workers

[illegible] population are Household Industry Workers

Sex-Ratio 100:24

More of the urban population is involved coupled by the fact that the Greater percentage of urban male population are involved as Household Industry Workers.

Sex Ratio is better in rural areas, although greater percentage of females involved in urban areas.

4. **Other Workers**

2.27% of rural male population involved in Other Work Sectors
12.83% of rural female population involved in Other Work Sectors
Sex-Ratio 100:53

46% of urban male population involved in Other Work Sectors
8.3% of urban female population involved in Other Work Sectors
Sex-Ratio 100:16

More of the population in both the rural and urban areas is involved as 'Other Workers'. However, a greater % of females are involved in these sectors in the rural areas than in the urban areas.

[B] Marginal Workers

A greater percentage of people in the rural areas are marginal workers. It should be remembered that the size of assets or landholding in the hills are very small compared to the plains.

.37% of rural male population involved as Marginal Workers
.88% of rural female population involved as Marginal Workers
Sex-Ratio 100:29
.30% of urban male population are involved as Marginal Workers
.18% of female male population are involved as Marginal Workers

Land ownership in terms of size in the hills is very small.

Distribution of population according to different categories of workers and non-workers by sex in the District of Darjeeling

Industrial Categories		Population Number			P.C. of col. '4' to respective total population
		Male	Female	Total	
(1)		(2)	(3)	(4)	(5)
A. Total Main Workers	Total	31773	120515	438248	33.71
	Rural	216787	104473	321260	35.54
	Urban	100946	16042	116988	29.54
1 Cultivators	Total	75085	33341	108426	8.34
	Rural	73970	33174	107144	11.85
	Urban	1115	167	1282	0.32
2 Agricultural Labourers	Total	36571	15211	51782	3.98
	Rural	35284	14815	50099	5.54
	Urban	1287	396	1683	0.43
3 Household and other than household (manufacturing processing)	Total	2057	665	2722	0.21
	Rural	1144	449	1593	0.18
	Urban	913	216	1129	0.29
4 Other Workers	Total	20420	71298	275318	21.18
	Rural	106389	56035	162424	17.97
	Urban	97631	15263	112894	28.50
B. Marginal Workers	Total	2409	4190	6599	0.51
	Rural	1762	3860	5622	0.62
	Urban	647	330	977	0.25
C. Non-Workers	Total	359181	495891	855072	65.78
	Rural	248775	328202	576977	63.84
	Urban	110406	167689	278095	70.21
TOTAL POPULATION (A+B+C)	Total	397323	620596	1299919	100.00
	Rural	467324	436535	903895	100.00
	Urban	211999	184061	396060	100.00

Source: Census of India, 1991

[C] **Non-Workers**

A greater percentage of the urban population comprises of Non Workers than the rural population.
53% of rural male population are Non Workers
75% of rural female population are Non Workers
Sex-Ratio 100:132
32% of urban male population are Non Workers
91% of urban female population are Non Workers
Sex-Ratio 100:152

63% of the total population involved as main workers is involved in 'Other' Job Sectors. They comprise of 21.18% of the entire Districts population.

12.32% of the Districts population is involved in agriculture.

The percentage of non workers among females is much higher than the males, especially in the urban areas. The female non-worker percentage is 38.15% in the District and 78% in the total female population.

Education and Culture

Number of Institutions, Students and Teachers in the district of Darjeeling, 1998-99

(Number)

Sub-Division and C.D. Block/M.M.C.	Primary			Middle		
	Insti-tutions	Students	Teachers	Insti-tutions	Students	Teachers
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Sadar Sub-Division	326	44277	1471	22	3680	132
Darjeeling Municipality	52	7913	253	2	162	13
Darjeeling Pulbazar	134	17023	651	8	1464	51
Sukhiapokhri-Jorebungalow	103	9768	320	8	1320	45
Rangli-Rangliot	77	9523	247	4	734	23
Kalimpong Sub-Division	227	29137	664	17	1711	79
Kalimpong Municipality	21	4118	84	2	44	14
Kalimpong I	77	9410	225	6	724	35
Kalimpong II	69	8121	199	6	261	14
Gorubathan	60	7488	153	3	682	16
Kurseong Sub-Division	152	18645	550	6	517	24
Kurseong Municipality	23	1967	106	-	-	-
Kurseong	83	10573	306	4	179	11
Mirik	46	6105	138	2	338	13
Mirik Municipality	-	-	-	-	-	-
Siliguri Sub-Division	393	67821	1281	10	1607	56
Siliguri Municipal Corp.	75	17648	324	1	194	6
Matigara	55	9080	178	4	710	24
Naxalbari	70	11479	204	3	435	16
Kharibari	80	12031	148	1	142	5
Phansidewa	113	175883	427	1	126	5
TOTAL	1138	159830	3966	55	7515	291

In Primary Schools, the number of students per teacher is higher in the sub-division of Siliguri than in the hill sub-divisions. In the hill, Gorubathan, the Municipality of Kalimpong and Mirik have a high number of students per teacher-48 students per teacher on an average.

For Middle Schools, the student per teacher ration is less than in the Primary Schools. Surprisingly, for the Kalimpong Municipality, there are only four students for every teacher.

The student-teacher ratio in High Schools is fairly uniform for all the four sub-divisions. For Darjeeling Municipality, however, there are only 12 students per teacher.

Where Colleges are concerned, Pulbazar and Matigara show the lowest teacher-student ratio of 8 students per teacher.

For the entire District, there are 1170 Primary Schools, 56 Middle Schools, 64 High Secondary Schools, 12 Colleges (including one university) and 8 Professional and Technical School or College.

Even if it is presumed that 16, 0587 students in the Primary Schools join the Middle, High, Higher Secondary or Professional and Technical Schools and Colleges, a large number of students can be presumed to have discontinued education after the Primary Level, especially in the rural areas (blocks)

Moreover, there are only 12 colleges in the entire District, the sub-divisions of Siliguri and Darjeeling share 5 each where Kurseong and Kalimpong have only 1 college each.

Where Professional and Technical Schools and Colleges are concened, there are 8 in the District.

Sub-Division and C.D. Block/M.M.C.	High			Higher Secondary		
	Insti-tutions	Students	Teachers	Insti-tutions	Students	Teachers
(1)	(8)	(9)	(10)	(11)	(12)	(13)
Sadar Sub-Division	18	6628	189	15	9138	341
Darjeeling Municipality	5	2052	53	7	2385	192
Darjeeling Pulbazar	6	2078	65	2	1915	37
Sukhiapokhri-Jorebungalow	6	1606	45	4	3097	73
Rangli-Rangliot	5	892	26	2	1741	39
Kalimpong Sub-Division	11	5396	136	8	9448	167
Kalimpong Municipality	1	513	21	5	6239	125
Kalimpong I	3	1896	45	-	-	-
Kalimpong II	5	2126	36	1	1617	15
Gorubathan	2	861	36	2	1592	27
Kurseong Sub-Division	13	5829	136	7	5181	143
Kurseong Municipality	3	1371	32	4	3765	102
Kurseong	7	2852	64	2	609	20
Mirik	3	1606	40	-	-	-
Mirik Municipality	-	-	-	1	807	21
Siliguri Sub-Division	19	10426	207	21	18065	545
Siliguri Municipal Corp.	9	5274	104	9	8442	298
Matigara	2	1108	21	3	1869	84
Naxalbari	1	523	11	4	3352	92
Kharibari	2	1056	22	1	1170	26
Phansidewa	5	2465	49	4	3232	95
TOTAL	59	2879	670	51	41832	1196

Sub-Division and C.D. Block/M.M.C.	College/University			Professional & Technical School & College		
	Insti-tutions	Students	Teachers	Insti-tutions	Students	Teachers
(1)	(14)	(15)	(16)	(17)	(18)	(19)
Sadar Sub-Division	5	2913	139	2	368	13
Darjeeling Municipality	3	2797	131	1	288	8
Darjeeling Pulbazar	1	34	3	1	80	5
Sukhiapokhri-Jorebungalow	1	82	5	-	-	-
Rangli-Rangliot	-	-	-	-	-	-
Kalimpong Sub-Division	1	878	38	-	-	-
Kalimpong Municipality	1	878	38	-	-	-
Kalimpong I	-	-	-	-	-	-
Kalimpong II	-	-	-	-	-	-
Gorubathan	-	-	-	-	-	-
Kurseong Sub-Division	1	675	17	2	292	22
Kurseong Municipality	1	675	17	-	-	-
Kurseong	-	-	-	2	292	22
Mirik	-	-	-	-	-	-
Mirik Municipality	-	-	-	-	-	-
Siliguri Sub-Division	5	5122	325	4	873	38
Siliguri Municipal Corp.	3	3239	95	1	200	5
Matigara	2	1883	230	3	673	33
Naxalbari	-	-	-	-	-	-
Kharibari	-	-	-	-	-	-
Phansidewa	-	-	-	-	-	-
TOTAL	12	9588	519	8	1533	73

Sub-Division and C.D. Block/M.M.C.	Special Education		
	Institutions	Students	Teachers
(1)	(20)	(21)	(22)
Sadar Sub-Division	--	--	--
Darjeeling Municipality	--	--	--
Darjeeling Pulbazar	--	--	--
Sukhiapokhri-Jorebungalow	--	--	--
Rangli-Rangliot	--	--	--
Kalimpong Sub-Division	--	--	--
Kalimpong Municipality	--	--	--
Kalimpong I	--	--	--
Kalimpong II	--	--	--
Gorubathan	--	--	--
Kurseong Sub-Division	--	--	--
Kurseong Municipality	--	--	--
Kurseong	--	--	--
Mirik	--	--	--
Mirik Municipality	--	--	--
Siliguri Sub-Division	--	--	--
Siliguri Municipal Corp.	--	--	--
Matigara	--	--	--
Naxalbari	--	--	--
Kharibari	--	--	--
Phansidewa	--	--	--
TOTAL	5000	79250	5000

*Blockwise figures are not available

Sources

1.D.I.of Schools (Primary), Siliguri

2.D.I.of Schools (Secondary), Siliguri

3.District Social, Education Officer, Siliguri

4.All Institutions, Siliguri

Sadar Sub-Division

Darjeeling Municipality: there are 52 Primary Institutions. The Teacher Student ratio is 1 teacher for every 33 students (approx.) on an average.

Middle Schools are 2 in number. The Teacher Student ratio is 5 teachers for every 100 students i.e. one teacher for every 20 students.

The High Schools are 5 in number. The Teacher Student is 100:3 or 33 students per teacher (average)

There are 7 Higher Secondary Institutions. The Teacher Student ratio is 1 teacher for every 12 students.

The number of Colleges are 3 and the Teacher Student ratio is 1:20 or 1 teacher for every 20 students.

There is 1 professional college where the student-teacher ratio is 33:1

Darjeeling Pulbazar/Sukhia Pokhri/Rangli-Rangliot.

The number of primary institutions are more in these rural areas. Pulbazar=142, Sukhiapokhri-Jorebungalow=109. In Rangli-Rangliot, however, the number of primary schools is less-79.

In the first two blocks, i.e. Darjeeling Pulbazar and Sukhiapokhri-Jorebungalow, the Teacher Student ratio is 27 students per teacher on an average. For Rangli-Rangliot, however, there are 39 students per teacher.

Kalimpong Sub-Division.

Kalimpong Municipality.

There are 21 Primary Schools and the ratio is 50 students per teacher.

For Kalimpong I there are 81 primary schools, 71 for Kalimpong II and 62 for Gorubathan. The Teacher Student ratio is 43 students per teacher, which is quite high. For Gorubathan only the ratio is 48 students per teacher.

Kurseong Sub-Division

Kurseong Municipality

There is a total of 23 Primary Schools. The Teacher Student ratio is 19 students per teacher.

There are 3 High Schools with 42 students per teacher on an average.

There are 4 Higher Secondary Institutions and the Teacher Student ratio is 37 students per teacher.

Private Schools have not been included-Figures not available: It can only be said that more people are sending their children to private schools, especially at the primary level. And this fever seems to have caught on by the people in the rural areas also, especially by the well-to-do families. The notion that private English schools are better than the Government schools has led to the increase in the number of admissions in Private schools and also in the number of Private schools that have mushroomed all over the District of Darjeeling. On the other hand this has led to the public educational institutions being neglected.

Percentage of Literacy in Rural and Urban Areas of the District by Sex.

The percentage of literacy is higher in the urban areas than in the rural areas, although the number of Primary Institutions is higher in the rural areas.

Only about 20% of the rural populatiorf consists of the population belonging to the Primary Schools. In the Urban areas, however, the student population belonging to the Primary Schools comprises of hardly 10% of the total population. But the greater literacy rate may be attributed to the presence of the large number of private schools in the urban areas of the District.

The percentage of literacy for women is less than in the percentage for men (67.07). In the rural areas, however the disparity is more. In the Rural areas, for males, percentage is 60% approximately and for females 37.53%.. In Urban areas, the percentage for males is 81.80% and for females is 70.98%. Gender plays an important role in the discrepancy in the male and female literacy because more preference is given to the male child in terms of education, nutrition etc. especially in the rural areas.

Preference for education is given to the male child in terms of quality as well as availability. The best quality or if it comes to deciding education with respect to the family income the male child is preferred. It is also a common practice that the eldest girl child is made responsible for household chores and bringing up the younger siblings over her need for education. In terms of continuing education the male child over preferred over the female.

Percentage of Literacy in Rural and Urban areas of the district of Darjeeeling by sex

Percentage

Sub-Division and C.D. Block/M/MC	Urban			Rural			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Darjeeling Sub-Division	88.15	77.56	83.05	65.82	43.39	54.82	70.79	50.79	61.02
Darjeeling Pulbazar	-	-	-	64.30	41.64	53.28	64.31	41.64	53.28
Jorebungalow-Sukhiapokhri	-	-	-	68.78	45.28	57.12	68.78	45.28	57.12
Rangli-Rangliot	-	-	-	64.35	43.75	54.26	64.35	43.75	54.26
Darjeeling Municipality	88.14	77.56	83.04	-	-	-	88.14	77.56	83.04
Kalimpong Sub-Division	83.41	72.47	78.14	62.46	43.52	53.40	67.24	50.20	59.07
Kalimpong I	-	-	-	69.36	51.70	60.79	69.36	51.70	60.79
Kalimpong II	-	-	-	62.65	44.54	54.08	62.25	44.54	54.08
Gorubathan	74.14	55.14	65.52	53.39	31.72	43.16	55.08	33.28	44.72
Kalimpong Municipality	84.17	73.73	79.12	-	-	-	84.17	73.73	79.12
Kurseong Sub-Division	85.59	70.72	78.46	70.45	46.23	58.84	75.51	54.45	65.37
Kurseong	83.55	63.13	73.68	69.06	44.22	57.00	71.63	47.55	59.74
Mirik	-	-	-	73.00	50.57	62.30	73.00	50.57	62.30
Kurseong Municipality	88.53	78.55	83.80	-	-	-	88.53	78.55	83.80
Mirik (N.A.)	77.49	54.97	66.48	-	-	-	77.49	54.97	66.48
Siliguri Sub-Division	78.88	68.46	74.23	51.8	27.96	40.51	62.93	43.54	53.96
Matigara-Naxalbari	82.56	63.86	74.10	55.84	34.03	45.51	58.34	36.61	46.68
Phansidewa	-	-	-	48.19	22.51	36.04	48.19	22.51	36.04
Siliguri (M)	78.6	68.81	74.23	-	-	-	78.60	68.81	74.23
DISTRICT	81.80	70.98	76.82	59.96	37.53	49.17	67.07	47.84	57.95

Note: Literate Population excluding Children of age group 0-6 years

Source: Census of India, 1991

Educational Institution by types in the district of Darjeeling.

Number

Type of Institution (1)	1995-96 (2)	1996-97 (3)	1997-98 (4)	1998-99 (5)	1999-2000 (6)
A General Education	1281	1281	1281	1315	1362
1 School	1269	1269	1269	1303	1350
i) Primary	1100	1100	1100	1138	1170
ii) Middle	51	51	51	55	56
iii) High	71	71	71	59	64
iv) Higher secondary/multipurpose	47	47	47	51	60
2 College	12	12	12	12	12
B Professional &Technical Education	8	8	8	8	8
Education					
1 School	3	3	3	3	3
i) Engineering/Techncial	1	1	1	1	1
ii) Teacher's Training	2	2	2	2	2
iii) Others	-	-	-	-	-
2 College	5	5	5	5	5
i) Engineering	-	-	-	-	-
ii) Teacher's Training	2	2	2	2	2
iii) Others	3	3	3	3	3
C Special Education	-	-	-	5000	5020
1 School	-	-	-	-	-
2 College	-	-	-	-	-
3 Mass Literary Centre	-	-	-	5000	5000
4 Child Education Centre	-	-	-	-	20
5 English Medium KG School	-	-	-	-	-
All Institution (A+B+C)	1289	1289	1289	6323	6390

Sources:-
1. D.I.of Schools (P.E.& S.E.).
2. Colleges, Darjeeling & Siliguri
3. Distirct of School Board, Darjeeling &Siliguri
4. Education Deptt. D.G.H.C.

The number of Primary Schools have increased from 1100 to 1138 from 1997-98 to 1998-99, and from 1138 to 1170 from 1998-99 to 1999-2000. Therefore in a span of three years, there has been an increase of 70n Primary Schools in the district.

Between 1997-98 to1998-99 the number of High Schools decreased from 71 to 59. This implies that 12 schools stopped operating within these two years. The number, however, increased from 1998-99 to 1999-2000 to 64.

The number of Higher Secondary schools increased from 1998-99 to 1999-200 by 9.

The number of Colleges, however, has not increased sicne 1989-90. There are 12 colleges (defined as all institutions except schools) in the District at present.

Where Special Education is concerned, 5000 Mass Literacy Centres were opened in 1998-99 and 20 Child Education Centres in 1999-2000.

***[Information regarding Private schools or colleges is not available]**

Sex Ratio, 0-6 age group Population, Literates and Literacy rates by sex for 1991 and 2001 at a glance for West Bengal and the districts

District	No. of Females per 1000 Males	No. of Females per 1000 males	0-6 Population 2001			0-6 Population (%) compared to total population	0-6 Population (%) compared to total population
	1991	2001	P	M	F	1991	2001
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
West Bengal	917	934	1113284	5671152	5461672	16.98	13.88

Darjeeling	914	943	193020	97906	95114	15.49	12.02

District	Literates 2001			Literacy rate excluding 0-6 Population 1991		
	P	M	F	P	M	F
(1)	(9)	(10)*	(11)	(12)	(13)	(14)
West Bengal	47821757	27784750	20037007	57.70	67.61	46.56
Darjeeling	1029561	592037	437524	57.95	67.07	47.84

District	Literacy rate excluding 0-6 Population 1991			Literacy rate excluding 0-6 Population 2001		
	P	M	F	P	M	F
(1)	(12)	(13)	(14)	(15)	(16)	(17)
West Bengal	57.70	67.61	46.56	69.22	77.58	60.22
Darjeeling	57.95	67.07	47.84	72.87	81.28	63.92

Student by sex in Different Types of Educational Institutions in the District of Darjeeling.

With regard to General Education, the number of female students has decreased between 1995-96 to1996-97 from 116676 to 116515. The number further decreased between 1997-98 to 1998-99 forme 118165 to 102077.

Where the number of male students is concerned, the number decreased sharply from 1997 to 1998-99 from 163071 to 144967.

The number of girls in primary schools decreased between 1995-96 to 1996-97 from 62903 to 62566. Between 1997-98 and 1998-99, their number decreased again in middle schools from 6268 to 28756.

Student by sex in different types of Educational Institutions in the district of Darjeeling

Number

Type of Institution	1995-96		1996-97		1997-98	
	Male	Female	Male	Female	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)
A General Education	157243	11676	158244	11615	16071	118165
1 School	151638	112241	152634	112076	154943	113712
i) Primary	87967	62903	88766	62566	90577	63843
ii) Middle	5873	6216	5886	6237	5936	6288
iii) High	19761	20331	19860	20436	20000	20580
iv) Higher Secondary/Multipurpose	38037	22791	38122	22837	38340	23021
2 College	5605	4435	5610	4439	5628	4453
B Professional & Technical Education	661	446	676	461	690	473
1 School	50	40	55	44	64	54
i) Engineering/Technical	-	-	-	-	-	-
ii) Teachers Training	50	40	55	44	64	54
iii) Others	-	-	-	-	-	-
2 College	611	406	621	417	626	419
i) Engineering/Technical	-	-	-	-	-	-
ii) Teachers Training	185	200	189	206	198	205
iii) Others	426	206	432	211	428	214
C Special Education	-	-	-	-	-	-
1 School	-	-	-	-	-	-
2 College	-	-	-	-	-	-
3 Mass Literary Centre	-	-	-	-	-	-
4 Child Education Centre	-	-	-	-	-	-
5 English Medium KG School	-	-	-	-	-	-
All Institutions (A+B+C)	157904	17122	158920	116976	161261	118368

Even in Middle Schools, the number of students from bot the sexes decreased between years 1997-98 and 1998-99. The female population decreased from 62628 to 2856

The female population decrease is observed for the same year in High Schools also. The male population decreased from 20,000 to 16402 and the female from 20850 to 11877. Even for Higher Secondary Institutions/Multipurpose Schools the number decreased from 38430 to 16402 (males) and 23021 to 11877.

continuation

	Type of Institution	1998-99		1999-2000	
		Male	Female	Male	Female
	(1)	(8)	(9)	(10)	(11)
A	General Education	114967	102077	162510	102266
1	School	139598	97858	147132	98392
i)	Primary	93438	66392	93906	66681
ii)	Middle	4659	2856	4861	3078
iii)	High	16402	11877	17731	12100
iv)	Higher Secondary/Multipurpose	25099	16733	30634	16533
2	College	5369	4219	15378	38914
B	Professional & Technical Education	865	668	835	667
1	School	272	100	237	107
i)	Engineering/Technical	200	40	167	42
ii)	Teachers Training	72	60	70	65
iii)	Others	-	-	-	-
2	College	593	568	598	560
i)	Engineering/Technical	-	-	-	-
ii)	Teachers Training	203	285	187	259
iii)	Others	390	283	411	301
C	Special Education	38940	40310	40163	41303
1	School	38940	40310	40163	41303
2	College	-	-	-	-
3	Mass Literary Centre	38940	40310	39723	40923
4	Child Education Centre	-	-	440	380
5	English Medium KG School	-	-	-	-
	All Institutions (A+B+C)	184772	142955	193508	144256

Sources:-
1.D.I.of Schoools (P.E.& S.E.)
2.Colleges, Darjeeling &Siliguri
3.Dist. School Board, Darjeeling & Siliguri
4.Education Deptt. D.G.H.C.

Agriculture

Agriculture, as practised in the hilly regions of the District, is different from agriculture as practised in the hilly terrain, which makes mechanised farming almost impossible. Thus, agriculture, as practised in the hills is very labour intensive. Women constitute a sizeable portion of the work force.

The total forest area according to the Directorate of Agriculture, Govt. of West Bengal, is 124.574 thousand hectares. This is only 38% of the total area measuring upto 325.469 thousand hectares according to D.L.R. West Bengal.

Agriculture
Some classification of land utilisation statistics of the district of Darjeeling

(in '000 hectares)

Year	Total area according to D.L.R. West Bengal	Forest according to State Forest Dept.	Current fallow	Other fallow land other than current fallow	Net cropped area
(1)	(2)	(3)	(4)	(5)	(6)
1995-96	325.469	124.74	9.771	4.200	145.832
1996-97	325.469	124.74	8.592	4.414	144.704
1997-98	325.469	124.74	8.626	4.272	144.709
1998-99	325.469	124.74	8.676	4.167	144.670
1999-00	325.469	124.74	8.631	5.939	147.986

Source: Directorate of Agriculture, Govt. W.B.

Area under Principal Crops in the district of Darjeeling.

thousand hectares

Crop (1)	Year 1995-96 (2)	1996-97 (3)	1997-98 (4)	1998-99 (5)	1999-00 (6)
Foodgrains					
1 Rice	39.6	36.7	35.5	36.4	35.7
Aus	5.6	6.1	6.5	6.2	5.2
Aman	33.9	30.5	28.9	29.9	30.1
Boro	0.1	0.1	0.1	0.5	0.4
2 Wheat	2.7	2.6	4.4	3.8	2.9
3 Barley	-	-	-	-	-
4 Maize	19.4	12.2	22.6	21.5	19.1
5 Other	11.7	11.7	11.8	11.8	11.8
Total	73.4	63.2	74.3	73.5	69.5
6 Gram	-	-	-	-	-
7 Tur	-	-	-	-	(a)
8 Other Pulses	1.9	1.8	1.9	-	1.8
Total Pulses	1.9	1.8	1.9	1.7	1.8
Total	75.4	65	76.2	75.2	71.3

continued...

continuation...

Area under Principal Crops in the district of Darjeeling.

thousand hectares

Crop	Year 1995-96	1996-97	1997-98	1998-99	1999-00
(1)	(2)	(3)	(4)	(5)	(6)
Oil seeds					
1 Rape & Mustard	0.2	0.1	(a)	(a)	(a)
2 Linseed	0.3	0.1	0.8	0.1	-
3 Other Oilseeds	0.4	0.3	0.3	0.2	0.2
Total Oilseeds	0.9	0.5	1.1	0.3	0.3
Fibre					
1 Jute	1.6	1.8	2.3	2.4	--
2 Mesta	-	-	-	-	-
3 Other Fibre	-	-	-	-	--
Total Fibre	1.6	1.8	2.3	2.4	--
Misc. Crop					
1 Sugar Cane	-	-	-	-	-
2 Potato	4.9	5.8	6.9	6.9	4.6
3 Tobacco	-	-	-	-	-
4 Tea	--	19.6	--	26.3	26.3
5 Chillies (dry)	0.3	0.4	0.4	0.4	0.4
6 Ginger	2.0	2.0	2.0	2.0	2.1
Total Misc Crop	--	27.8	--	35.6	33.4

a = less than 50 hectares

Sources:- (I) Directorate of Agriculture, govt. of W.B.
(ii) B.A.E. & S. Govt. of W.B.
(iii) Darjeeling Plantation Association
(iv) Tarai Tea garden Association

In 1999-2000, Tea occupied 26.3 thousand hectares of the cropped land. Rice is a major crop in the District occupying 35.7 thousand hectares in the same year. Other important crops produced in the District are:-

Jute-mainly grown in the plains of Siliguri, covering up to 47.5 hundred hectares.

Wheat-mainly grown in parts of Kalimpong and is about 65.7 hundred hectares of the plains.

Potato-4.6 thousand hectares (1999-2000) are used for the cultivation of potato. As hill altitudes are suitable for the cultivation of these, the yield is higher in the hilly sub-divisions of the district than in the plains.

Among the three hill sub-divisions, maize and millet are grown as part of the local diet.

Mustard, Til and Maskalai, on the other hand is grown in the sub-division of Siliguri. Mustard occupied 70 hectares in 1999-2000, Til-290 hectares and Maskalai-110 hectares.

Ginger and Cardamom are valuable cash crops in the hills, along with other vegetables like peas, beans, cauliflowers, beetroots, carrots, radishes, tomatoes and squash.

Production of Principal Crops:

The production of rice had declined between 1996-1999. Between 1995-96, 50.5 thousand tonnes of rice were produced. Between 1996-99 the production declined to an average of 39.2 thousand tonnes. The production rose up to 51.5 thousand tonnes 1999-2000 again.

The production of maize also has decreased over the years. Between 1995-96, 80,000 tonnes of maize was produced. The graph for the production of maize shows a rise and fall pattern, but on the whole the average production has decreased. In 1996-97, 61,000 tonnes were produced. In 1997-98, 87,000 tonnes were produced and in 1998-99, 78,000 tonnes. The production reached a low of 42 thousand tonnes in 1999-2000.

On the whole the production of cereals has decreased-from 147.1 thousand tonnes in 1995-96 to 112.0 thousand hectares 1999-2000.

Even for oil-seeds, the production has decreased from .4 thousand tonnes, (400 tonnes) in 1995-96 to .1 thousand tonnes (100 tonnes) in 1999-2000.

The production of jute however, has increased to 22.5 thousand tonnesin 1999-00 from 16.9 thousand tonnes in 1995-96.

The production pattern of potato, on the other hand has been that for maize. In 1995-96, 60 thousand tonnes, in 1996-97, 71.6 thousand tonnes which shot up to 98.6 thousand tonnes in 1997-98, but decreased to 88 thousand tonnes in 1998-99 and then to 57 thousand tonnes in 1999-2000.

The production of ginger has been relatively constant over the years, at an average of 5.76 thousand tonnes between 1995-2000.

On the whole, the figures when taken from 1989-90 onwards reveal that the area undertaken for agriculture has decreased over the years, except for miscellaneous crops, like ginger, dry-chilly and potato for which the area undertaken for production were fairly constant over the years.

For all other food grains and crops the area for production has decreased. This could be because of the pricing

Production of Principal Crops in the district of Darjeeling

Thousand Tonnes

Crop (1)	1995-96 (2)	1996-97 (3)	1997-981 (4)	1998-99 (5)	1999-00 (6)
Foodgrains					
1 Rice	50.5	38.8	39.5	39.3	51.5
Aus	6.1	5.0	4.2	5.5	7.5
Aman	44.1	33.5	35.0	32.5	42.9
Boro	0.3	0.3	0.3	1.3	1.1
2 Wheat	2.9	3.8	6.4	3.1	4.6
3 Barley	-	-	-	-	-
4 Maize	80.1	61.2	87.1	77.6	41.7
5 Other Cereals	13.6	14.2	14.3	14.2	15.5
Total Cereals	147.1	118.0	147.3	134.2	112.0
6 Gram	-	-	-	-	-
7 Tur	-	-	-	-	(b)
8 Other Pulses	0.9	1.1	1.3	-	1.3
Total Pulses	0.9	1.1	1.3	-	1.3
Total Foodgrains	148	119.1	148.6	135.3	113.3

continued...

system does not make the production of these crops economically viable.

continuation...

Production of Principal Crops in the district of Darjeeling

Thousand Tonnes

Crop	1995-96	1996-97	1997-981	1998-99	1999-00
(1)	(2)	(3)	(4)	(5)	(6)
Oil seeds					
1 Rape & Mustard	0.1	0.1	(b)	(b)	0.1
2 Linseed	0.1	(b)	0.3	(b)	-
3 Other oilseeds	0.2	0.2	0.1	0.1	(b)
Total Oilseeds	0.4	0.3	0.4	0.1	0.1
Fibre*					
1 Jute	16.9	16.2	20.0	21	22.5
2 Mesta	-	-	-	-	-
3 Other Fibre	-	-	-	-	-
Total Fibre	16.9	16.2	20.0	21	--
Misc. Crop					
1 Sugar cane (+)	-	-	-	-	-
2 Potato	60.3	71.6	98.6	88.2	57.3
3 Tobacco	-	-	-	-	-
4 Tea	--	11.3	--	28.6	27.5
5 Chillies (dry)	0.2	0.2	0.3	0.3	0.4
6 Ginger	5.8	5.9	5.3	5.8	6.0
Total Misc. Crop	--	89.0	--	122.9	91.2

(b) less than 50 tonnes

* Production in thousand bales of 180 kgs each

(+) Production in terms of gur

Sources:

(I) Directorate of Agriculture, Govt of W.B.

(ii) B.A.E & S Govt. of W.B.

(iii) Darjeeling Plantation Association

(iv) Tarai Tea garden Association

Yield rate of Principal crops:

Even though the area under production had decreased along the years, the yield rate of rice shot up to 1,443 Kg/ha in 1999-00 from 1,274 Kg/ha in 1995-96. This shows that the cultivation of rice was more intensive during the last year.

This is true for other foodgrains like wheat, barley, cereals and pulses and crops (like, Jute, Mesta, Chillies and Ginger. But for foodgrains like maize the yield rate has decreased to 21889 Kg/ha in 1999-00 from 4135 Kg/ha in 1995-96.

As compared to the yield rate of some selected crops like Rice, Wheat, Jute, Rapseed and Mustard and Potato in West Bengal, the yield rate in the district of Darjeeling is always less.

Yield rate of Principal Crops in the district of Darjeeling

Kilogram per hectare

Crop	Year 1995-96	1996-97	1997-98	1998-99	1999-00
(1)	(2)	(3)	(4)	(5)	(6)
Foodgrains					
1 Rice	1274	1057	1112	1079	1443
Aus	1092	815	646	882	1446
Aman	1299	1098	1210	1088	1426
Boro	2801	3000	2816	3500	2712
2 Wheat	1086	1470	1472	808	1566
3 Barley	-	-	-	-	-
4 Maize	4135	5021	3852	3608	2188
5 Other Cereals	1162	1214	1212	1203	1314
Total Cereals	2003	1866	1983	1825	1312
6 Gram	-	-	-	-	-
7 Tur	-	-	-	-	-
8 Other Pulses	470	618	694	-	722
Total Pulses	490	618	694	647	714
Total Foodgrains	1964	1831	1951	1798	1589

continued...

Continuation

Yield rate of Principal Crops in the district of Darjeeling

Kilogram per hectare

Crop	Year 1995-96	1996-97	1997-98	1998-99	1999-00
(1)	(2)	(3)	(4)	(5)	(6)
Oilseeds					
1 Rape & Mustard	517	738	619	633	712
2 Linseed	201	193	341	241	-
3 Other Oilseeds	500	667	333	500	--
Total Oilseeds	444	600	406	432	521
Fibre*					
1 Jute	10.6	9.1	8.9	9.1	9.8
2 Meesta	-	-	-	-	-
3 Other Fibre	-	-	-	-	-
Total Fibre	10.6	9.1	8.9	9.1	--
Misc. Crop					
1 Sugar Cane	-	-	-	-	-
2 Potato	122233	12321	14363	12702	12395
3 Tobacco	-	-	-	-	-
4 Tea	-	576	--	2036	1838
5 Chillies (dry)	681	701	750	743	831
6 Ginger	2885	2910	2625	2828	2912
Total Misc. Crop	--	3201	--	3452	2730

* in bales/hectares

Sources:-

(I) Directorate of Agriculture, Govt of W.B.
(ii)B.A.E. & S. Govt. of W.B.
(III) Darjeeling Plantation Association
(iv) Tarai Tea garden Association

This could be attributed to the fact that agriculture in the hilly terrain proves to be more difficult than agriculture in the plains. More over the number of small and marginal farmers has increased over the years. Between 1985-86, the number of marginal holdings (below 1.0 acre) was 39,889 which increased to 90,579 in 1995-96. The area under these marginal holdings increased from 18,608 hectares to 48,076 hectares. Similarly, the number of smallholdings has increased from 19,993 in 1985-86 to 24,903 in 1995-96.

However, the number of medium and large size holdings has decreased. Between 1990-91 to 1995-96, the number of medium size holdings decreased from 3.169 to 1.539 and the number of large holdings decreased from 3.169 to 1.539 and the number of large size holdings decreased from 224 to 201. The number of semi-medium holdings decreased from 1.20,98 to 11.235.

The above figures indicate that more and more farmers are being relegated to the status of small and marginal farmers. One of the reasons for this could be because of the rise in population. For example, in a family which owns land as an asset, the land gets distributed or fragmented because the male children of the family. So the size of the land holding becomes smaller and smaller with every generation on the condition that more than one son in born in the family.

The falling land-man ratio in the hills and in Siliguri could be said to have affected not only the agricultural production but also the economic status of the people dependent on agriculture.

The 1991 Census reveals that 42% of the entire rural population belongs to the age group between 15-39 years. Factors like growing pressure on land the consequent increase in the number of agricultural labourers have led to rural-urban migration. This is also characterized by the decline in the percentage of rural population to the entire population of the District as such.

In the agricultural scenario in the hill sub-divisions and that of Siliguri, a basic disparity is noticed in the access to technology and other irrigational benefits.

Also in the hills, there are only 11 fertilizer depots, 5 at Darjeeling/Pulbazar, 4 at Jorebungalow/Sukhiapokhri and 2 at Kalimpong II. In the sub-division there are 7 fertilizer depots, 2 at Matigara, 1 at Naxalbari, 2 at Kharibari and 1 at Phansidewa.

There are 4 seed stores in Jorebungalow-Sukhiapokhri. All other blocks in the hills have none. Siliguri sub-division has 7 seed stores in total.

The agriculturists suffer from a major setback when it comes to communication and lack of access to any Fair Price Markets and most of them depend on middlemen who exploit them in every possible way.

Moreover, other industries in the hills are incapable of helping the agriculture in mitigating its problems. 'Over the last forty years, the total number of labour force in the tea-industry in the hills has remained stagnant. Thus the growing population, which cannot be absorbed by the tea industry, has to fall back to agriculture. Only 3% of the total District's population is employed in small industrial establishments. Tourism, which has a very bright prospect in the hills, has not reached the rural sector. Moreover, there are 1046 inhabited villages in the district of which 11 are identified in the 1981 census as villages with 'concentration' of rural industries. And surprisingly, all these industries are mostly concentrated in and around Siliguri town.

Some basic statistics about the district of Darjeeling in the year 1998-99 & 1999-2000

Sl. No.	Name of Block	No. of villages having drinking water facilities	No. of fertilizer depots	No. of seed stores	No.of fair price shops	No.of G.P. with telephone/ telex facility
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Darjeeling-Pulbazar	48	5	-	67	2
2	Sukhiapokhri-Jorebungalow	43	4	4	28	5
3	Rangli-Rangliot	29	-	-	33	2
4	Kalimpong-I	43	-	-	36	4
5	Kallmpong-II	22	2	-	45	3
6	Gorubathan	31	-	-	6	2
7	Kurseong	57	-	-	14	4
8	Mirik	11	-	-	12	2
9	Matigara	79	2	3	6	5
10	Naxalbari	83	1	1	18	3
11	Kharibari	66	2	2	17	4
12	Phansidewa	108	1	1	31	5

Sources:-
1) B.D.O
2) A.D.O
3) Dist. Agri. Marketing office
4) Post and Telegraph

Even with regard to the electrification of the villages, out of the 120 inhabited villages in the Darjeeling sub-division, 85 were electrified (1996). In the sub-division of Kurseong, 49 out of 68 villages are electrified. In Kalimpong, out of 96 villages, 91 were electrified. In Siliguri, out of 336 villages, 281 were electrified

Population involved in Agriculture:

Among the hill sub-divisions, Kalimpong has one of the highest percentages of total population involved in agriculture. Kalimpong-I has 28.63% of it's population as cultivators and agricultural labourers. On an average, for every 100 cultivators, there are 26 agricultural labourers. Kalimpong-II has 31.82 of its population involved in agriculture, and on an average, there are 8 agricultural labourers for every 100 cultivators.

Percentage distribution of population according to different categories of workers and non-workers in the district of Darjeeling, 1991

(population in number)

Sub-division/C.D.Block/M/NA	Total Main Workers		Class of Main Workers			
	Population	P.C.	Cultivators		Agricultural Labourers	
			Population	P.C.	Population	P.C.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Sadar Sub-Division	11464	32.05	28131	8.09	7678	2.21
Darjeeling Pulbazaar	18181	24.88	302	0.14	147	0.2
Sukhiapokhri-Jorebungalow	30868	33.44	4732	5.13	1963	2.13
Rangli-Rangliot	18652	28.55	4312	6.60	2243	3.43
Kalimpong Sub-Division	68383	35.94	37726	19.57	7299	2.84
Kalimpong (M)	9990	25.73	538	1.39	868	2.24
Kalimpong-I	19877	37.06	12186	22.72	3172	5.91
Kalimpong-II	20863	40.58	15149	29.47	1209	2.35
Gorubathan	17653	38.06	9353	20.17	2050	4.42
Kurseong Sub-Division	46735	31.87	8465	5.77	2354	1.61
Kurseong (M)	6536	24.43	6	0.02	3	0.01
Kurseong	27168	34.45	6360	8.07	1857	2.35
Mirik	11267	33.14	2907	5.90	399	1.17
Mirik (N.A.)	1764	25.12	92	1.31	95	1.35
Siliguri Sub-Division	211666	34.41	34604	5.63	34451	5.50
Matigara/Naxalbari	668637	35.36	11070	5.7	11990	6.18
Kharibari/Phansidewa	70742	34.67	23376	11.46	22240	10.90
Siliguri (M)	72287	33.32	158	0.07	221	0.10
District	438248	33.71	108426	8.34	51782	3.98

M= Municipal
M.C.=Municipal Corporation
N.A.=Notified Area

Source:Census of India,1991

In the sub-division of Siliguri, the percentage of agricultural labourers is higher than that in the other sub-divisions (5.60%). Even compared to the number of cultivators, the number of agricultural labourers is almost equal. On the whole, in the sub-division, for every 100 cultivators, there is an equal number of agricultural labourers as well. This could be interpreted as-since the density of population is highest in the Siliguri sub-division (112.km^2), the number of landless labourers becomes greater.

A little more than 50% of the Districts population is involved in agriculture. 16% of the rural male population consists of cultivators and about 8% as agricultural labourers. 7.6% of the rural female population are cultivators and 3.4% of them are agricultural labourers. In the agricultural sector, therefore, the sex ratio is 100:4, which is better than in other job sectors.

Inspite of the fact that such a large percentage of the population is involved in agriculture, this sector falls under the list of unorganized sectors. The main reasons being the lack of a regulated market, the lack of transportation facilities and the absence of infrasturcture to support the farmer during the lean season.

The number of fair-price shop as compared to the number of inhabited villages is very inadequate (see table 'Some basic statistics about the district of Darjeeling in the year 1998-99 & 1999-2000' and the table given above.) **The farmers have to rely on middle men for the marketing of their products. Thus the prices charged are decided by the middleman irrespective of the prices prevailing in the market. Sometimes the desperation to sell his/her goods becomes so great that the farmer has to forego his/her desire for profit. This is because of the lack of a**

proper marketing system and proper means of transport of goods from the field to the market. Naturally, therefore, because the farmer does not have the means to subsist during the lean season, he/she borrows money from the middlemen at 60-120% per annum, thus becoming indebted to sell another harvest to the middle-men for another year.

Administrative Units of the District of Darjeeling, year 1999

(Number)

Sub-Div	Police Station	C.D.B.I./M/MC	Inhabited Villages (1991)	House-holds (1991)
(1)	(2)	(3)	(4)	(5)
Sadar	6	3	120	66274
	Darjeeling	Darjeeling (M)	-	13225
	Lodhoma Pulbazar	Darjeeling Pulbazar	48	22643
	Sukhiapokhri Jorebungalow	Sukhiapokhri Jorebungalow	46	43
	Rangli-Rangliot.	Rangli-Rangliot	29	12123
Kalimpong	3	3	96	34240
	Kalimpong	Kalimpong (M)	-	6853
	Pedong	Kalimpong I		9513
	Algovah	Kalimpong II		8915
	Gorubathan Jaldhaka	Gorubathan		8959
Kurseong	2	2	68	27990
	Kurseong	Kurseong (M)	-	4525
		Kurseong	57	15385
	Mirik	Mirik	11	6670
		Mirik (M)	-	1410
Siliguri	5	4	336	39471
	Matigara/Naxalbari	Matigara/Naxalbari	162	3807
	Khoribari/Phansidewa	Khoribari/Phansidewa	174	37827
	Siliguri	Siliguri (MC)	-	39471
District	16	12	620	243872

Sources:-
1) Directorate of Panchayat, W.B.
2) Census of India, 1991

Population features of farmers in the district of Darjeeling in the year 1998-99 &1999-2000

Sl. No	Name of Block	Bargadars		Patta holders	
(1)	(2)	(3) 98-99	(4) 99-00	(5) 98-99	(6) 99-00
1	Darjeeling-Pulbazar	1560	1561	11548	5782
2	Sukhiapokhri-Jorebungalow	27	27	876	876
3	Rangli-Rangliot	115	115	5137	5137
4	Kalimpong I	1440	1440	7741	7741
5	Kalimpong II	1225	1225	355	355
6	Gorubathan	98	98	3063	3063
7	Kurseong	132	132	956	956
8	Mirik	23	23	262	262
9	Matigara	1004	1004	8539	8539
10	Naxalbari	1676	1676	7881	7881
11	Kharibari	798	798	6988	6988
12	Phansidewa	2209	2209	3108	3108

continuation

Population features of farmers (number) in the district of Darjeeling in the year 1998-99 & 1999-2000					
Sl.No (1)	Name of Block (2)	Marginal farmers households (9) 98-99	(10) 99-00	Agriculture labourer(1991) (11) 98-99	(12) 99-00
1	Darjeeling-Pulbazar	3795	3325	3325	3325
2	Sukhiapokhri-Jorebungalow	1668	1668	1963	1963
3	Rangli-Rangliot	1327	1327	2243	2243
4	Kalimpong I	4710	4710	3172	3172
5	Kalimpong II	2156	2156	1209	1209
6	Gorubathan	1331	1331	2050	2050
7	Kurseong	851	851	1857	1857
8	Mirik	1986	1986	399	399
9	Matigara	1105	1105	11990	11990
10	Naxalbari	1806	1806		
11	Kharibari	2008	2008	22240	22240
12	Phansidewa	2059	2059		

Notes:

1) Marginal farmer household possessed agricultural land measuring upto 2.5 acres (7.5 bighas)

2) Small farmer household possesses agricultural land measuring more than 2.5 acres and upto 5 acres (15 bighas)

3) All figures are Provisional

Sources:

1) Census of India, 1991

2) B.L. & L.R.O.

Cash crops: the principal cash crops of the hills are ginger, cardamom, oranges and amlisho (broomstick). The cash crops have a higher fluctuation pricing in the market. Lately some of the cash crops have been over-exploited due to its market value thus rendering the soil infertile and also reducing prduction levels of these crops. This is because monoculture cash crops are capital intensive and also have a higher resource utilization pattern. Ginger, cardamaom and oranges face decreasing production problems due to over-exploitation which has led to high level of disease infestation. The disease infestation is external with pest attacks or unsustainable farming practices.

The Telegraph North Bengal and Sikkim

Natural crops come cropper-from Vivek Chhetri

Darjeeling, July 28: Pesticides and fertilisers don't feature in the hill farmers' agenda. But even when 'natural' has become the buzzword for the discerning consumer, the cultivators fails to earn their share of profit.

"Lack of awareness." Says R.N. Prasad, principal agriculture officer, DGHC, "is the main reason for the stagnation of profit. The government that overlooks the efforts of the farmers adds to their frustration."

Even though Darjeeling boasts of an approximate area 30 thousand acres of land under cultivation, most of the produce only finds a market in the regular bazaar in Siliguri.

The farmers in the plains command a price as high as rupees four for akilo of potatoes that has been grown with large doses of chemical fertilisers. "Farmers in the hills get the same price for their organic produce," says Prasad. "With an organic tag, even whole sellers in the city charge as much as Rs. 10."

Sources, however, agree that the infrastructure built to help the farmers grossly fail to live up to their purpose.

Potato, the primary crop, grown approximately over an area of 4000 hectares produces about 120 quintals per hectares against an expected 160 quintals per hectare.

Other vegetables like beans, radish, cabbage and cauliflower also short of the estimated.

Though the government has set up firms across the region to provide the farmers with better facilities and research stations in various places to come-up with better varieties of seeds, the farms are not functioning properly. Multiplication farms at Bijanbari, Puldong near Sukhia and at Gorubathan in Kalimpong sub-division, potato research factory at Ghoom Bhenjang and at Sonada, which is spread over an area of 2000 acres, have failed to come up with answers to the problems faced by the farmers.

Prawal Ghimere, a farmer from Echey, Kalimpong said the system of distributing hardier varieties of seeds has also been phased out.

The problems, officials claim, lies with lack of initiative of both the parties. They admit there is hardly any contract between the farmers and agriculture officials in the hills. "The farmers are not kept posted about the latest developments in the field of cultivation in the hills" an official said. " the entire system needs to be overhauled so as to bring about greater interaction between us."

Prasad "A proposal has been made for distributing mini-kits, Prasad said. "If things progress as expected, we hope to distribute the same by September 2002 covering more than 50 per cent of the cultivable land in the hills at the first go."

Darjeeling Tea

Tea was first introduced in Darjeeling between 1840 and 1850 by Dr. Campbell (Superintendent of Darjeeling) and Major Crommelin at Lebong, where they opened experimental nurseries. By 1905 nearly 79 square miles were under cultivation. Tea plantations in Darjeeling are restricted to Darjeeling and Kurseong sub-divisions only. Kalimpong sub-division was left out as it already had agricultural holdings and reserve forests.

Tea is grown in altitudes ranging from 600 to 2000 metres above mean sea level. The cool and moist climate, the soil, the rainfall and the sloping terrain all combine to give Darjeeling Tea its unique "Muscatel Flavour" and "Exquisite Bouquet"

The combination of natural factors gives Darjeeling Tea its unique distinction not found anywhere else in the world. Thus it is much sought after and highly valued in the affluent Western and Japanese market. 80% of the total produce is exported every year.

Today, there are 87 registered gardens producing what is acknowledged as 'Darjeeling Tea' and the area on which this is produced is 17,500 hectares. The total production ranges from 10 to 11 million kilograms annually.

Darjeeling in the early days was a sparsely populated hamlet and was used as a hill resort and tea being a labour intensive industry needed sufficient number of workers and so people from Nepal was brought in and given employment. The present ethnic composition of the workforce is probably thus explained.

Apart from tourism, the biggest industrial activity, and that offering the largest employment in the hills is tea. The industry provides employment directly and indirectly to about 50% of the population. 60% of the directly employed are women. This is because right from the beginning a large portion of women were absorbed since all field jobs such as weeding, sickling, plucking of tea leaves are well handled by women workers. The employment is on a family basis. In most of the gardens it is the third or fourth generation of workers who are employed. These families consider these gardens as their permanent home and the employment is passed on from parent to child. These people are completely dependent on the tea plantations for their livelihood and have no other means of existence. Their entire lives are spent in the gardens and the retired ones breathe their last on the same garden. The Darjeeling tea industry employs over 55 thousand souls on a permanent basis round the year basis, while a further 25 thousand or so are engaged during the plucking season which lasts from March to November. Also, besides the direct employment figures mentioned above, a large section of the hill population earn their livelihood form the peripheral sector of the industry, which consists of transport, supplies, repair establishments etc.

Seasonal employment and perennial unemployment is a big problem in the tea gardens of Darjeeling.

A tea plantation can be described as a capitalist institution operated with wage labour whose ownership may assume any three forms: foreign control via transnational corporations; indigenous ownership (either in public or private sector); or a joint venture comprising of foreign and national interests.

But ownership pattern is of no significance when it comes to wages or working conditions. The labour is kept at a quasi-subsistence level.

Each tea garden has a group of permanent employees who form just 20-25% of the total population

The payment of wages in tea plantations in hill areas are based on piece rates-the "hazira" and "ticca". The "hazira" is the daily wage paid to each worker on completion of a particular task which has been allocated for the day. The wage rate is Rs. 41.80per day, but daily rated workers engaged in certain jobs other than plucking get additional compensation over and above the daily wages at the rate of Rs.2.00 for garden jobs and factory work according to the Plantation Labour Act, 1951. The latter two categories have been lumped into one. " Ticca" refers to overtime work as well as to extra plantation work given in contract. Each worker usually supports five to seven family members with his/her wage.

During the plucking season, March to November extra labour is needed. Since leaf growth is not continuous but comes in flushes extra labour is needed for about six months a year. The management employs seasonal labours, usually women from the garden. They are also known as "biga" workers. Their wage is based on quantity of green leaves they pluck. The rate varies from one garden to the other since there is no stipulated rate fixed by the DPA. In some gardens "biga" workers are paid as high as Rs.13 per kg and in some they are paid as low as Rs. 3.00 per kg. This depends on the production of the garden. The rate is higher during the plucking season but as the season proceeds the rate goes down. The average quantity of tea stipulated per day is 8.5 kg of tea plucking but anything above it is "ticca" which is paid at the going rate.

Wages in Rupees

Year	Rupees
2000-2001	37.80
2001-2002	41.80
2002-2003	45.90

The Plantation Labour Act, 1951.

('Darjeeling tea-the people forgotten', From the RCDC desk 1997).

The Plantation Labour Act, 1951 was formulated in with a view to improve the living and working conditions of the people in the gardens, since in the early days the people had to face every kind of hardships known to man. The Plantation Labour Act is a Central Govt. Enactment. The preamble to this Act aims at providing for the Welfare of labour and to regulate the conditons of work in plantations. To implement the provisions of this Act, West Bengal State Rules were framed in 1956. A suitable organizational set up was established to enforce several of this Acts and Rules.

As stated a garden has a set of people who live within the plantation and work in the gardens. But only the permanent workers who constitute 20% of the population are entitled to the benefits from the management such as housing, drinking water, children's education, health facilities, subdised food, clothing, provident fund and other fringe benefits according to the Plantation Labour Act. The low wages may seem justifiable from this point of view, but the Act leaves out 80% of the population of the garden, which makes it an unjust Act. Empirical findings show that every provision of this Act is violated and flouted. At times certain provisions are partially fulfilled, or when the management fails to honour the provisions, puts up stumbling blocks to those willing to help. The gardens have no proper drinking water facilities and latrines are non-existent. Medical facilities and creches are a far cry from the provisions of the enactment. For education, gardens rely on the Government Primary Schools whose delivery are quite contrary to its intention. High schools are mostly in the urban areas reducing the number of High Schools whose delivery are quite contrary to its intention. High Schools are mostly in the urban areas reducing the number of High School going students and colleges are out of reach for the majority. The condition is conducive for the management as education means awareness and demand of one's rights. Also education means the acquisition of new skills and the movement of labour to better work environment which goes against the very principle of the workings of a garden, namely, an isolated large labour force who is solely dependant on the garden for survival. Houses for 8% of the permanent workers must be built every and even agter more than 40 years of the enactment most gardens have not provided proper housing for all permanent workers, whose numbers have hardly increased appereciably over the years. Houses lack sanitary provisions are pitiable. Electricity is yet to make an appearance in most gardens. Subdised food meant for worker and dependant, have been reduced to worker alone in some gardens. Facilities for protection from weather are partially fulfilled. Workmen spray toxic pesticides regularly without any protection, training and knowledge of consequences and nature of work. Since the benefits due to them are not provided for the real wage diminishes forcing the worker to concentrate and prioritise the needs to what is essential fro survival. In this situation, the daily wage is not enough to meet the basic needs. In today's context of prices of essentials spiralling upwards and value of money going down it means that the real wage of the worker is diminishing. If the Act is properly implemented it would mean that the worker would not have to pay for the basic needs from his/her own pocket, but this is not so. So, where is there possibility for the worker to think of education for the children. health and hygiene, proper medical facilities and shelter? The worker is fighting an eternal battle against hunger where victory means a proper meal and defeat and empty stomach. This is done with no other reason but to maximise profits, as tea being a labour intensive industry after the initial capital investment the labout bill is the largest. Cutting this bill naturally means profits shooting up for the owner.

Tea is a profitable industry and within it Darjeeling Tea is the best performer. Yet, the real producer, the worker, lives in conditions that are in marked contrast to the industry's turnover. The worker is treated like jus a cog in a giant wheel, a cost of production. The position of the worker in the industry is largely undermined and the work highly undervalued. The state of deprivation and exploitation has been perpetuated for three to four generations now. The problem emerges out of the capitalistic mode of production of the industry where there is a large disparity between the owner and the worker and between prices and costs. The owner goes to great lengths to maximise profit and one of the fallouts is the deprivation and exploitation of the worker. Provisions of what is due to the worker in terms of the entitlements of the Act still leave a large surplus for the owner but the willingness to part with it is lacking. While millions of people enjoy their cup of tea and enormous profits are raked in, the people who really put their hands into its production remain anonymous, forgotten, unsung heroes and scum of the earth. Thus, enactment of legislation, provision of organisational set up to see its implementation is not enough to guarantee the well-being of the worker, it requires will.
Patenting of Darjeeling Tea.

Darjeeling Tea is most sought after because of its distinct quality and flavour, which again is the result of the unique and complex combination of agro-climatic conditions of Darjeeling's geographical area.

At present, there are 87 registered gardens producing what is acknowledged as 'Darjeeling Tea'. Confusion is at times created by the fact that the Darjeeling tea growing area is not exactly synonimous with the administrative district of

Darjeeling. The Gorkha Hill Council's jurisdiction includes 11 gardens in the plains of the Terai area but domestic or international buyers do not accept the produce of these gardens as "Darjeeling Tea".
This limitation did not prevent the unscrupolous in the global tea trade from capitalising on the name and reputation of Darjeeling tea and it is generally believed that some 40 million kg of tea are sold globally as 'Darjeeling'.

As there was no legal control on the use of the name 'Darjeeling', other, cheaper varetics were being offered to consumers and the availability of such teas also resulted in a depression of value and price of the genuine product.

Protection was obviously called for. In the wake of the World Trade Organization recognising the need to protect Intellectual Property Rights, Govt. of India has defined the area in which tea grown and manufactured can be called 'Darjeeling' tea and has promulgated the Geographical Indication Act that will fortify it.

Further, in February 2000, the Tea Board of India has registered a Trade Mark for Darjeeling tea that will certify its origin, invoice by invoice. This should allow the Tea Board to monitor the movement of the tea and, in the event of a dispute, the concerned trader should be able to produce the documents proving the authenticity of the tea. At the same time, legal producers should now be possible against those who may continue to misuse the name 'Darjeeling' in connection with tea and thereby mislead the consumer.

The assumption that more teas are being sold under the name of Darjeeling than is actually produced, indicates that there is a demand for this premium tea. Therefore, if pure and unadulterated Darjeeling tea can be made available to the consumers, they would be willing to pay a higher price for the product. *('Darjeeling tea', Ranen Dutta-Sept,2000).*

No. Of Registered Tea Gardens in Darjeeling.

1. Aloobari	30. Liza Hill	59. Ringtong
2. Ambiok (Hillton)	31. Longview (Highlands)	60. Rishcehat
3. Arya	32. Lopchu	61. Rohini
4. Avelgrove	33. Margarets Hope	62. Runglee Rungliot
5. Ambootia O	34. Marybong	63. Rungmook/Cedars*
6. Badamtam	35. Mim	64. Rungneet
7. Barnesbeg	36. Mission Hill	65. SamabeongO
8. Bannockburn	37. Moondakotee	66. Selimbong (Rongbong) O
9. Balasun	38. Mohan Majhua	67. Soom
10. Chongtong (Sirisi)	39. MakaibariO	68. Singtom
11. ChamongO	40. MullootarO	69. Steinthal
12. Castleton	41. Mahalderam	70. Sungma
13. Dhajea	42. MonteviotO	71. Selim Hill
14. DooteriahO	43. Nagri	72. Singbulli
15. Dilaram	44. Nagri Farm	73. Sivitar
16. Edenvale	45. North Tukvar	74. Springside
17. Ging	46. Narbada Majhua	75. Soureni
18. Gielle	47. Nurbong	76. SingellO
19. Glenburn	48. Namring & Namring	77. Sepoydhoorah (Chamling)
20. Gopaldhara	(Upper)	78. Seeyok (Spring Valley) O
21. Gomtee	49. Oaks	79. Tukvar (Puttabong)
22. Giddapahar	50. Okayti	80. Tumsong
23. Gyabarree & Millikthom	51. Orange Valley	81. Turzum
24. Happy Valley	52. Pandam*	82. Tindharia
25. Jogamaya	53. Peshok**	83. Thurbo
26. Jungpana	54. Phoobsering	84. Tukdah
27. Kalej Valley	55. Poobong	85. Teesta Valley
28. Kumai (Snowview)	56. Pussimbing (Minzoo) O	86. Upper Fagu
29. Lingia	57. Phuguri	87. Vah Tukvar**
	58. Rangaroon*	

O Organic Gardens
* WBTDC Gardens
** Sick Gardens

Source: Darjeeling Planters Association, DPA.

Organic tea gardens.

As seen from the above table there are, at present, 11 organic tea gardens. As per available information, seventeen gardens in Darjeeling produce around 400 thousand kgs of organic tea annually, which is more than 38% of the total organic production in India. Out of which the seventeen gardens, only eight are reported to be the members of Indian Bio Organic Tea Association.(Techno-Economic Survey on Darjeeling Tea Industry, Tea Board of India)

Although, it is generally believed that due to the harmful effects of pesticides and chemicals the tea gardens were prompted to adopt sustainable practices. It can be said, that the shift has been mainly because of the demand for organic tea in the market or as when the Maximum Residual Limit was found too high as a consequence of which Darjeeling tea suffered in the international market. But in tea-estates like Makaibari the drive has come from within and even before the boom in organic tea it had started practicing production. For a last decade or so, a number of estates have adopted organic production and fair trade practices in alliance with experts and NGOs in Europe, primarily in Germany. Samabeong is one such garden, situated at 6,500 feet close to the Nepal border it is one of the highest and most isolated garden. The estate was closed down in 1970 when tensions between the management and the unions intensified. In 1990 the "Tea Promoters" group leased Samabeong from the Government of India. From then, things started taking a different course in the estate and in place of the traditional monoculture, organic systems have been introduced. The running of the farm is based on the principles of Participation and Cooperation. A management council made up of three women and five men meets every month. Their main priorities are primary education, better composting methods, drinking water, road construction and dairy farming for the workers. One tangible result is a high quality junior school for children from the farm and surrounding areas. Samaebong has forged a close relationship with GEPA fair trade company in Germany, which sells nearly all the production, which is packed on-site, creating additional employment.

The Sanjukta Vikas Co-operative is also working to buy small holder tea from the Mineral Springs region, where hundreds people have been surviving on subsistence agriculture since the closure of the Harrison estate in the early 1950's. These people have been ever the years been exploited by middlemen and loan-sharks. With support from the Regional Community Development Committee (RCDC), the SVC has set up a milk co-operative, a small credit union and consumer co-ops for basic goods; and has carried out an afforestation programme wth WWF India. The switch to organic initially faced opposition not only from other planters but also from traders in their main market, Germany, who feared that organically labelled teas would stigmatize their "conventional" brands as unsafe.
But the switch to organic production on the whole has meant that the ecology of the tea areas and the environment as a whole is sustained and the workers and the people in the estates are no longer exposed to health hazards posed by the use of pesticides and chemicals.

For what Makaibari, Samabeong and Mineral Springs all show is that the future for Darjeeling will have to involve much more than simple technical improvements. A new ethic of tea production is needed, founded on two obvious but historically supressed truths. The first is that plantation monoculture tend to exploit both people and the environment. The mixed-farm approach to tea cultivation, founded on organic principoes, is essential not only for ecological health, but also to provide dignity and decent livelihood to the community. The second is that the local people need to have a financial stake in the outcome, and that means breaking up the monopoly of absentee land-ownership. Looking at the way tea production is going in the region.- ("This Difficult Drink", Ritu Kunar and Nick Robins).

Darjeeling Planters Association

Crop Figures

Year	mkgs
1985	9936173
1986	10166417
1987	10241412
1988	10001735
1989	10408601
1990	10965703
1991	11268500
1992	8811078
1993	9892457
1994	9550962
1995	9478292
1996	9980435
1997	8767137
1998	9593630
1999	8383709
2000	8445816
2001	8038669

Source: Darjeeling Planters Association, DPA.

From the above figures 'Darjeeling Planters Association-Crop Figures' it is seen that the annual production of tea has gone down. One of the factors responsible for the low rate of production is because due to the use of over aged bushes. The peak age of a bush is 40 to 60 years, but in Darjeeling there are bushes more than hundred years old, and replacement and replanting has been lagging behind. The reason behind this is that the owners of the gardens are not the local people and the profits instead of being reinvested in the estates are diverted elsewhere. Some half hearted measures measures were taken by the govt. for replantation of tea bushes through different schemes of tea board. But at times it has

been admitted by the tea board that money given to planters were not used in the gardens rather were shiphoned off to other speculative industries.-('Women Workers in the Informal Sector', Dr. Shanty Chettri)

In addition very few gardens have undertaken extension although there is land for extension. Besides the estates are lacking in technological developments too.

District and Statewise Age Group of Tea Bushes								
State and Districts	Below 5 years	5 to 10years	11 to 20 years	21 to 30 years	31 to 40 years	41 to 50 years	Over 50 years	Total
Darjeeling	795	1,270	402	510	614	883	8,562	13,036
Terai	2,300	1,087	1,192	969	874	1,116	2,955	10,493
Dooars	5,350	5,330	6,383	6,040	8,108	4,626	26,517	62,354

Source: Tea India

This and the other factors like the change of Directors and managers in short periods have led to the stagnation and the instability of the gardens.

The mid 80's were marked by the Gorkha Agitation, a demand for a separate state of Darjeeing. During this period work was stopped in the gardens and many factories and infrastructures were burnt down and destroyed. This led to some gardens going sick, and some facing closure. Some of the gardens were taken by the WBTDC (West Bengal Tea Development Corporation), which are running at a loss but some inevitably were closed down.

The closure of Gardens like Vah Tukvar and Peshok are such instances. Transparency and accountability is lacking in the gardens and whenever the management and the trade unions come into conflict, or whenever the gardens runs at a loss the management and the owners abandon the garden. This too has been the case in Peshok and Vah Tukvar tea gardens.

When the British left, they left behind a master and slave system. Because of this the people of these closed estates could not cope with the situation. And ever since the closure of the gardens the people from these gardens who are faced with unemployment have started migrating to the urban areas to seek employment where they work as unskilled labourers in construction work or have moved to the cities seeking work as security guards.

But contrary to this the residents of Peshok tea garden have shown that the master-slave psyche can be broken. The garden was closed in 1993, but today the people have brought change and are prospering in a multi-culture environment.

As stated earlier, one sees that the system left by the British is still existent and even the coming of the DGHC hasn't been able to bring about the much needed change. The profits continue to be enjoyed by the people outside, whereas the people are treated as coolies and labourers. Looking at the larger picture one sees that the tea industry has had a negative impact in every sphere of life in the hills. Not only are the people residing in the gardens affected but the people in the surrounding areas and the urban areas too are affected.

Due to the stagnating employment growth and the rising population, alcoholism, substance abuse, prostitution, and other negative social acts have become rampant in the hills. The morality and ethics of the society has deteriorated and the psyche and confidence of the people has gone down. The people have lost confidence in themselves, especially the residents of the estate, because they are still very much dependant on the gardens for making a living.

Considering these aspects, it becomes evident that the Plantation Labour Act needs to be reviewed and social justice should be brought to the people who rightfully should be profiting, or at least should be getting the benefits from the tea plantation.

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Tea Gardens give labour laws the slip

Friday June ,21 2002 Statesman News Service-Bengal Plus

Kolkata, June 20- Tea gardens in the state avoid provision of the rules framed under the Plantation Labour Act, 1951, by using the loopholes in the Act, according to the Standing Committee on Labour 2001-02, even as the state government has set up a cell to effect coordination with the tea industry.

In view of the loopholes, the government also cannot take stringent action against the delinquent owners of tea gardens.

In its second report presented to the Assembly, the committee recommended that appropriate steps should be taken to amend the existing rules to make them free from all the lacunas and loopholes.

The committee has noticed that in case of violating the provisions contained in the relevant Act, the owners against whom the government filed cases, had managed to escape by giving a fine of Rs. 500 only.

The committee, therefore, felt that the quantum of punishment was not sufficient to refrain the owners from violating the existing norms and rules in the Plantation Labour Act.

Tea Gardens and tea processing factories in the state employing 20 or more labourers are not within the purview of the Employees State Insurance Scheme under ESI Act, 1948.

Although the previous committee had suggested that such units should be brought within the purview of the ESI scheme, there was no development in this direction. As such the present committee has suggested that the government should take up the matter in right earnest.

In the same report, the committee has also taken note of the fact that at present the tea industry has been going through a hard time because of mounting cost of production and poor realisation from its products.

Laid low by high tea!

14th December, Friday, 2001 The Statesman-West Bengal Plus.

Breaking away from a century-old tradition, the Darjeeling Planters' Association held its annual general meeting last week without lunch or dinner. This "austerity drive" has caused shock all round. It also reflects the health of the area's tea industry.

"A severe cash crunch has forced us to cut down on the ceremonial part. So, for the first time in its 128-year history, the DPA served neither lunch nor dinner," said Ranen Dutta, secretary of this premier organisation. The customary pre-lunch drink session, which used to provide scope for low-pitch banter, once the serious part of the meeting ended was also missing "for want of sponsors."

"Unthinkable" to most present at the meeting, the DPA ended the day's proceedings with 'high tea'.

"It will make Dr. Campbell, the man who had brought tea to Darjeeling, turn in his grave tonight," said a senior planter of the Darjeeling hills summing up the general feelings.

"Established in 1873, the DPA went through a series of transitions. But the institution never deviated from its tradition till the other day. The departure seems to be permanent," Datta said.

The scene is also bleak for the tea industry. "Darjeeling tea may soon become a scarce commodity in Darjeeling itself," said DPA president Arun Gomden. " Tea from other regions including that from Nepal has swamped the town of Darjeelong. They are being sold as Darjeeling tea while the authorities turn a blind eye to the authorities turn a blind eye to the situation," Gomden said.

Equally concerned about the future of Darjeeling tea. DPA chairman RK Dixit said: "The Darjeeling tea industry has been shattered by the turn of events since last year. An unprecedented economic slump and sharp increase in the production costs have taken a heavy toll, Unless proper measures are taken, things will go from bad to worse."

Darjeeling tea is being sold at the lowest price ever. Since more than 70 percent of it is exported, the average sale price has come down drastically because of global recession, the DPA chairman said. In the industry's estimates, the cost of production of Darjeeling tea will go ahead of the sales average by Rs 92 per kg next year.

"Abysmally low yields because of ageing tea bushes, depleted carbon levels in the soil and by far the lowest labour productivity among all tea growing regions of the country, have added to the high cost of production," Dixit stated. The production level has dropped from 15 million kig in the late 1970's to a little wver eight million kg in the past 25 years. "To ensure economic immediate measures are required," Dixit said.

In his opinion, aggressive marketing, promotion of the Darjeeling trademark and improvement of the soil structure are a must. "Uprooting and replanting tea bushes at the minimum rate of 2 per cent of the existing plantation area per annum should be mandatory to obtain loans or subsidies," he said.

Organic tea makes comeback in Darjeeling.

Saturday, May 18, 2002,-Hindustan Times, Kolkata

Pranod Giri-Siliguri, May 17.The Growing taste of organic tea in foreign markets has prompted tea planters of the Darjeeling hills to switch to organic farming, as it was done before the 1960's.

Excessive use of chemical fertilisers is said to be a reason for the dip in export of the Darjeeling tea. Tea experts say the switchover was a foregone conclusion. Farming through cheical fertilisers cannot last long an planters are bound to switch to organic farming, they say.

Seventeen tea gardens of Darjeeling have already started growing organic tea using natural manure. Last year the Hills produced 2 million kg of organic tea, more than a fifth of the total production.

The Makaibari Tea Estate in Kurseong has switched to organic farming in the 1980's itsself. The Selimbong, Sewok and Samaebong tea estates began producing organic tea five years ago.

Tea Gardens like Singel in Kurseong switched over to organic cultivation quite recently and other tea estates are tempted too, seeing the encouraging returns from the market for those already using the organic method.

The foreign market is very conscious of the quality of tea they buy, and the chief cause of the dip in exports of Darjeeling tea is its high maximum residual level (MRL), said Haris Mukhia a tea expert who runs Saicon, a tea consultancy.

Tea gardens are black listed on MRL, find it very difficult to export the product later, said Mukhia.

But the switchover to the organic methods of cultivation is not very easy for the estates long used to the new methods. Tea gardens that have shifted to organic farming are inspected evey year by the Institute of Marketology on Organic Farming.

The inspection is carried out for the first three years, called "conversion period", and it is only then that the tea garden is given an "organic certificate". Eight to 10 tea gardens in the Hills have been cleared, said Haris Mukhia.

Experts say the going is smooth after the first three years, several tea gardens in Assam switched over to organic tea, believed to cure many ailments. But in the Terai and the Dooars of North Bengal, the response of estates to organic tea has been less than lukewarm. Just one tea garden, Patharjhora Tea Estate, grows organic tea, said a planter.

A big reason for this is the reluctance of tea planters to take the risk, especially now that the tea industry is going through troubled times.

"Organic farming is a hesitant transition since it costs Rs 100 to Rs 200 more per kg of tea than traditional tea," said a planter. Haris Mukhia doesn't agree. He said the cost of production falls after the third year. Moreover, organic tea fetches a better price than organic tea, he said.

There are others who advocate the " integration" of organic and inorganic farming, especially in the early years. Dr. S.E. Kabir, academic coordinator and tea consultant of the tea management department of North Bengal University says tea planters should concentrate more on quality than quantity. Ultimately, tea planters have to switch over to organic farming he said.

Excerpts from the article-

Planting Commission

NB Plus, The Statesman, Friday 28, June 2002

Environmentalist, social activist and author, LB Dewan is a veritable institution on everything involved with tea. Now on the West Bengal Tea Development Corporation's Board of Directors, he continues to be concerned about the raw deal handed out to tea estate workers, as Aswini Tamang and Deep Milan Pradhan find out."...there are numerous tea gardens. Generations of labourers have slogged in them. And still, many a time, even their meagre remittances aren't paid on time. Leave aside the other amenities like gumboots, raincoats and umbrellas, what do you think they eat? How do you think they survive? Where do you think they get their energy from to keep working in pouring rain or under the blazing sun?"

...and he resumed. "This is an act of terrorism, too. Economic terrorism," he claimed. "you beat the very daylight out of those wretched peasants in travail and don't even provide them a few morsels on time."

Born in the Munnah Tea Estate in the foothills of Mirk, he was destined to join the business. And he rose to manage the place. Then and always a garden man, he hankled numerous labour problems while subtly mingling with the workers and handling them tactfully. He knew their psyche and the complexity of their poverty-stricken lives. It was perhaps this bond that prompted him to question his boss. "You see Sir," he had said, "When the company reaps a fortune everybody is rewarded-the managers, the directors, other officials. The factory, the bungalows, offices and even the tractor gets a complete overhaul. But when the losses are to be made up, it's the meagre wages of the labourers that don't reach on time. It's their yearly bonuses that are either overlooked or deducted. It's their ration and other amenities that are delayed. Sir, during good times at least, let us be a bit more charitable." Well, all he had earned were a few smirks and a couple of disgruntled colleagues who waited for the slightes chance to malign him. But then, sheer hard work won him retribution.

The soft corner could still be traced as we gossiped on. " And what about Peshok, Patung and Vah Tukvar?" he blazed on. "These were gardens owned by the Central government public sector unit, the Tea Trading Corporation of India, whose bushes had grown wild years ago, with its labourers in dire straits. Whatever happened to their children and families? Nobody bothered. How could such large government-owned gardens suddenly kick thousands onto the brink of hunger and frustration. It was a deliberate act of trampling a person's most basic right to earn a livelihood.

"Look at the expenses today. Petroleum prices have risen, transport costs have gone up and cheap vegetables hauled up from further down Siliguri have turned bitter. Yes, that's what they say, the grapes are sour. When the labour wage is supposed to be Rs.100, it's still a measly Rs.41.90. some gardens have it even worse. A beggar in Kolkata perhaps collects more in a day."

This was the economic terrorism he had propounded. We were quite amazed. Well it's open secret-one man's perspiration is another's prosperity. Who visits these remote nooks anyway. The top notch have their nests well feathered. Air-conditioned offices, extravagant facilities, fat bonuses for bumper seasons, a Matiz and what not. And

somewhere amidst these obscure nooks, a child has discontinued studies even in a government school for exercise books, pencils, uniform, food on time have all become a luxury.

Dewan contemplates: "If a family is burdened with thoughts like what they'll have for dinner, what their children are to be fed with and the growing credit at the ration shop...it's almost terrorising them, isn't it? His words reveal a concern that's all too apparent.

If the government-owned gardens caused them so much pain, what could one expect from the privately owned ones? We then tried to tilt the lengthening course of our conversation. "With such a sizeable chunk of the hill population still remaining in the estates, and so many others educated, but unemployed, whom do we actually blame? Is it inadequate training, lack of infrastructure, or no job awareness. You see, our principal industry is tea and one can very well call it our identity, right?"

There was a broad grin on his face. "You see, we have numerous privately owned gardens. And the good posts are already reserved. A brigadier's son, a colonel's son-in-law, some bureaucrat's nephew and so on. What can anyone do about it?"

He spoke of managers who couldn't mutter English. And how could one handle people without communication skills?" And as for his green exploits, *The National Geographic Society* cap never leaves his head. He became a member just because he nurtured and still nurtures this secret longing of having the Society's team visit Darjeeling and study its diverse flora and fauna.

During his tenure as manager, he planted almost 152,000 trees over a period of 13 years. He also started the Friends of Trees Forum and is a member of numerous environmental organisations. And to feather his manager's cap, he retired in 1993 bequeathing a legacy to his successors-an agricultural production of about 135,000 kg. His hard work and zeal for planting bolstered the garden's fortune. With all this, the West Bengal Tea Development Corporation sure has a prize to catch in this old planter.

Tea Estates: Certain Information (Darjeeling Hills)

Sl. No.	Name and Address of the T.E.	Area (Hectares)		Daily and Permanent				Monthly rated
		Gross area	Area Under Plantation	Male	Female	Children/ Adolescents	Total	(Clerical, Medical Technician, Sub-staff)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1.	Namsing T.G., P.O., Rungi, Darjeeling	771.58	468.89	436	761	10	1207	165
2.	Seeyok T.G., P.O., Mirik, Darjeeling	406.80	154.01	196	245	4	445	64
3.	Pandam T.G., Darjeeling	381.21	131.31	111	155	-	266	36
4.	Arya T.G., Darjeeling	228.65	123.26	39	179	11	229	78
5.	Rungreet T.G., Darjeeling	164.27	87.53	32	104	-	236	23
6.	Chamong T.G., P.O., Pokhriabong, Darjeeling	331.99	164.93	113	312	7	432	82
7.	Tukvar T.G., Darjeeling	891.44	436.72	594	983	35	1612	139
8.	Nagrifarm T.G., P.O. Nagrifarm, Darjeeling	571.37	285.66	401	509	-	910	118
9.	SingellT.G. P.O., Kurseong, Darjeeling	554.50	282.53	253	403	2	658	99
10.	Singbulli & Tingling T.G., P.O., Phuguri, Darjeeling	823.94	252.51	396	913	28	1337	85
11.	Rangaroon T.G., P.O., Darjeeling	156.01	89.93	47	110.	-	157	26
12.	Mahaldiram T.G., P.O., Mahavadi, Darjeeling	110.00	68.9	55	83	1	139	15
13.	Jungapara T.G., P.O., Mahanady, Darjeeling	99:7	77.00	122	136	-	258	46

14.	Marybong, T.G., P.O., Marybong, Darjeeling	395.08	278.86	212	426	4	642	79
15.	Pashok T.G., P.O., Pashok, Dist. Darjeeling	865.16	305.70	345	482	-	827	122
16.	Liza Hill T.G., P.O., Ghoom, Darjeeling	183.67	117.04	180	277	1	458	52
17.	Selimbong T.G., P.O., Pokhriabong, Darjeeling	307.70	160.96	201	288	1	490	73
18.	Oaks T.G., P.O., Sonada, Darjeeling	191.31	138.91	101	193	4	298	41
19.	Resheehat T.G., P.O., Ghoom, Darjeeling	199.11	136.38	210	269	9	488	51
20.	Lingia T.G., P.O., Ghoom, Darjeeling	220.39	137.94	228	248	-	476	54
21.	Badamtam T.G., Darjeeling	880.10	321.05	638	611	21	1270	161
22.	Runglee Rungliot T.G. Darjeeling	417.60	183.72	211	278	1	490	50
23.	Aloobari T.G., Darjeeling	58.0	22.0	7	26	-	33	3
24.	Phuguri T.G., P.O., Phuguri, Darjeeling	427.41	296.35	215	371	4	590	78
25.	Bannackburn T.G., Darjeeling	283.80	142.64	141	215	3	359	59
26.	Glenburn T.G. Darjeeling	759.0	278.74	504	443	1	948	82
27.	Vah-Tukvar T.G., North Point, Darjeeling	506.87	197.08	267	394	6	667	82
28.	Gyabare & Milikthong T.G., P.O., Darjeeling	812.85	311.51	431	386	2	819	91
29.	Pissimbing T.G., P.O., Ghoom, Darjeeling	389.38	201.90	154	313	--	467	58
30.	Balasum & Mumah T.G., P.O., Sonada, Darjeeling	682.94	352.61	349	704	13	766	113
31.	Nagri T.G., P.O., Nagripur, Darjeeling	567.91	306.50	348	592	4	944	105
32.	Soom T.G., P.O., Northpoint	507.0	234.61	333	408	3	744	61
33.	Thumbu T.G., P.O., Mirik, Darjeeling	1408.05	478.40	484	1091	-	1575	164
34.	Happy Valley T.G., Darjeeling	162.0	105.0	86	182	11	279	53
35.	Moondekotee T.G., P.O., Sonada, Darjeeling	1020.0	467.78	709	733	2	1444	168
36.	Margaret's Hope T.G., P.O., Sonada, Darjeeling	780.03	358.0	461	690	4	1155	86
37.	Mim T.G., P.O., Sukhiapokhri, Darjeeling	389.6	169.15	250	345	13	608	74
38.	Mullotar T.G., P.O., Mahanadi, Darjeeling	147.71	134.15	131	141	1	273	22
39.	Barnesbag T.G., P.O. North Point, Darjeeling	288.7	128.02	134	201	1	336	47
40.	Sivitar T.G., P.O., Mahanadi, Darjeeling	525.35	144.63	114	186	19	319	31
41.	Castleton T.G., P.O., Kurseong, Darjeeling	254.2	151.48	31	150	-	181	31
42.	Orange Valley T.E., Darjeeling	347.26	185.53	140	270	13	423	63

43.	Rangmukh & Cedou T.E.P.O., Sonada, Darjeeling	716.1	531.87	801	912	13	1726	221
44.	Tumsong. T.G., P.O., Sukhiapokhri, Darjeeling	186.82	150.26	117	243	4	364	64
45.	Lopchu T.G., P.O., Lopchu, Darjeeling	321.1	91.46	120	173	3	596	49
46.	Sungma T.G., P.O., Pokhriabong, Darjeeling	454.55	281.95	372	480	-	852	95
47.	Soureni T.G., P.O., Mirik, Darjeeling	136.8	94.20	98	121	2	221	21
48.	Gille T.G., P.O., Teesta Valley, Darjeeling	486.84	249.29	271	380	-	651	76
49.	Kelej Valley T.G., P.O. Teesta Valley, Darjeeling	495.8	234.59	178	255	-	433	98
50.	Singtom T.G., Darjeeling	631.34	261.4	172	406	-	578	16
51.	Ging T.G., P.O. Darjeling	633.2	260.71	326	435	10	771	113
52.	Ringtong & Hopetown T.G., P.O. Sonada, Darjeeling	966.54	338.00	273	517	1	791	72
53.	Teesta Valley T.E., P.O. Teesta Valley, Darjeeling	717.40	298.34	253	413	4	670	196
54.	Dooteriah T.G., P.O. Ghoom, Darjeeling	1264.53	440.14	470	725	12	1207	160
55.	Gopaldahara T.G., P.O. Mirik, Darjeeling	321.61	131.77	107	229	5	341	45
56.	Goomtee T.E., P.O. Mahanadi, Darjeeling	234.72	124.24	78	185	-	263	9
57.	Tukdah T.G., P.O. North Point, Darjeeling	556.93	227.84	321	268	-	689	97
58.	North Tukvar T.G., P.O. North Point, Darjeeling	510.15	237.24	903	415	-	1318	60
59.	Menteviot & Edenvale T.G., P.O. Kurseong, Darjeeling	77.65	59.91	32	108	10	150	24
60.	Chongtong T.G., P.O. Ghoom, Darjeeling	393.11	376.1	307	786	10	1103	101
61	Dilayam T.G., P.O. Ghoom, Darjeeling	358.63	198.41	106	160	4	270	37
62.	Poobang T.G., P.O. Dist. Darjeeling	525.84	167.5	175	293	-	468	62
63.	Okayti T.G., P.O.Mirik, Darjeeling	347.47	208.82	142	408	2	552	72
64.	Phoobsaring T.G., Darjeeling	510.15	237.24	196	364	-	560	86
65.	Giddapahar	119.57	94.34	20	64	-	84	8

Source: Plantation Workers In West Bengal, Labour Gazette 1994, Department of Labour, Government of West Bengal

Tourism

Darjeeling as said earlier is known for the three T's which of course are Tea, Tourism and Timber and these are also the three main source of income of the Darjeeling Hill Areas. We have already seen the state of Tea as it is Darjeeling and it can safely be said that the situation of Tourism in Darjeeling is also on the verge of a downward trend. After the accord of 1988-99 a major portion of the Department of Tourism has been handed over to the Darjeeling Gorkha Hill Council.

The evolution of the town of Darjeeling dates back to 1835 after Captain Lloyd established a sanatorium here. The completion of the Calcutta Darjeeling Road in 1838 was the first step towards introducing modern communication.

The introduction of narrow gauge railways in 1881 increased the accessibility of Darjeeling. In the colonial period, the tea industry was the pivot of growth and development. An inflow of civil servants, officials, planters, and labourers helped the gradual expansion and many civic amenities were gradually appended to this town. This helped the development of 'second' homes around Darjeeling, Kalimpong and Kurseong of the wealthy landlords in eastern India.

The formal introduction of tourism was only in 1938 when the first hotel, The Darjeeling Family Hotel, was constructed. It was followed by the Nilson Hotel. Woodlands followed shortly followed by Drum Druid, Rockville, Bellevue, Central Hotel and Hotel Mount Everest. Till 1975, tourism was managed privately with little encouragement or interference by the government. The Tourism Department of the Government of West Bengal came into being in 1958, and the West Bengal Tourism Development Corporation in November 1975, with the task of supplying the visitors with basic information about places of tourist interest. The establishment of Darjeeling Gorkha Autonomous Hill Council in 1988 led to tourism activities being transferred to the DGAHC. However, the West Bengal Tourism Development Corporation continues to operate in the area.

Entry for foreign tourists into the Darjeeling Hill Areas was closed after the Indo-China war in 1962. This resulted in a decline in tourism activities in the area. Consequently, infrastructure development suffered. These restrictions were lifted in 1985 and the number of tourists, particularly the foreign tourists visiting Darjeeling increased markedly. When compared with the growth in the resident population, the increase in tourist population is far greater. It has been surmised that the increase in the number of tourists has been so rapid that infrastructure facilities cannot keep pace (SPA 1998).

Tourism is an important economic activity in mountain areas generating incomes and employment for the local population. The tourists every year spend to the tune of Rs. 70 crores. Everybody right from a chaiwala upto the hotel owner benefits from the tourism. Apart from an increase in the income and the demand for local products, tourism also results in a multiplier effect. This refers to the way in which tourist expenditures filter through the economy and generate other economic activities. The multiplier effect is based on the concept of interdependency of different sectors of the economy the result of which is that any change in the host economy's level of output, income, employment, government revenue and foreign exchange flows will be greater than the value of the initial change. The multiplier is expressed as a ratio of change in one of the above variables to the change in tourist spending that brought it about. In addition to its contribution to economic growth in the host economy, the labour intensive nature of tourism and tourism related industries results in a significant impact upon the level of employment in this sector. Income and employment generation are the most obvious positive impacts of tourism.

Tourism, especially mass tourism results in adverse impacts, leading to environmental stress. The first major source of environmental stress is the permanent restructuring of the environment brought about by a variety of major construction activities. Intense building activity leads to the creation of urban areas lacking in aesthetic value. Often it is in complete discord with the surrounding natural resources and scenery with the result that the site is no longer scenic and tourists move to other destinations. The second area of environmental stress results from the generation of increased waste residuals. Tourism activities also result in soil erosion, change in plant cover and species diversity. The fourth area comprises seasonal population increases resulting in physical congestion and an increased demand for natural resources. These negative impacts often result in a decline of tourist numbers, which in turn results in adverse economic impacts with a substantial decline in income and employment. Hence there is a need to sustain tourism activities through proper planning intervention.

The genesis of the problem in the area can be traced to the haphazard growth and uncontrolled granting of land use rights by the British. Expansion of construction activities along the steeper slopes (slope greater than the one suited to urban use) has exceeded the carrying capacity of the land. Hence, the frequency and intensity of landslides has increased. Besides, an expansion of the built up area at the expense of forested or open areas has resulted in an increased run off accompanied by a reduction in spring discharge. Lower rate of infiltration has resulted in the lowering of the ground water table and hence a reduction in the discharge or yield of springs. This has adversely affected the water supply in the town since the natural springs form the source of water supply to the town.

The rapid increase in tourist population has also resulted in the creation of high-density urban areas lacking in aesthetic value. These high-rise buildings obstruct views, the raw material for scenic tourism. In addition, the increase in the built up space to provide for tourist amenities has taken place at the expense of forested areas. The rapid increase in urban and tourist population and the associated building activities results in landslides nearly every year.

So Darjeeling, which is known as the "Queen of the Hills", is now or can be no longer said to be the queen of the hills. Rapid urban growth, and the ever-growing resident and tourist population put tremendous pressure on the fragile ecosystem of the Darjeeling Hill Areas. During the British days, only single or double storied houses of light construction were allowed to be constructed to admirably suit the low load bearing capacity of the soils here. With rapid urbanization and demand for constructions created by tourism and a total lack of control by the municipalities, we have now ended up with concrete monsters of buildings, many, of which are continuing to grow vertically to six storeys or more! To have one such building located on a wide expense of land is one thing; but to have a continuous stretch of such tall buildings, one on top of the other, spells disaster.

Although it is true that the construction of high rise buildings and illegal buildings should be stopped or controlled through proper implementation of rules and regulations the root of the problems that Darjeeling is now facing

is because of the great divide in the rural and urban break up. For this we have to look at the land use pattern in Darjeeling where 58% of the land has been taken up by Forests, Tea and Cinchona and the remaining 42% has been left for the use of the people. So one can see clearly that there is hardly any place or space left for growth.

Till date most of the local people of Darjeeling has seen tourism as a boon but it remains unquestioned by the masses whether it is really a boon. Because, ever since Darjeeling has been made the thrust area of tourism, we have seen adverse affects on its environment. To begin with Darjeeling has witnessed a sudden growth in the number of Taxis/Vehicles, which is now posing a major threat to the health and environment of the people in terms of vehicular pollution and accidents on roads-(see health and environment). Traffic regulation is adversely affected during the tourist seasons where taxis cram up the roads and parking space.

Apart from this, the resource of Darjeeling is put under much strain during the tourist season. The people experience shortages ranging from fuel to water-Darjeeling being famous for its water crisis. And besides with inappropriate measures of waste disposal the tourists leave behind with them a huge quantity of waste, which they generate during their stay and it is impossible for one to overlook the unhygienic and dirty conditions of the place.

Excluding the Siliguri Sub-division where there is a red-light area, the Darjeeling Hill area has no red-light area as such. But with the boom of Tourism, the Darjeeling Hill Area has witnessed a sudden rise in prostitution and today tourism in the hills has become synonymous with prostitution. So the risk and threats of sexually transmitted diseases and HIV/AIDS has become an imminent threat to the people of Darjeeling.

Though most people look upon tourism as a means of making a living, it is seen that the assets of tourism do not belong to the people. When it comes to running hotels it is the people from the plains who run these hotels or lease them. And in the rural areas there is very little or no people who are involved in tourism, so the question of them benefiting does not even arise. The only ones who benefit are the travel agencies. And even if tourism does reach to the rural areas, the effects tourism will have on the value systems, culture and as mentioned above the health and environment remains to be assessed and analysed to come up with a suitable solution.

Thus it may be safely be concluded that the role of tourism in the Darjeeling Hill Areas needs to be re-evaluated which should be followed up by judicious action by the locals and the authorities involved. And it is up to the people what they want-whether Tourism in Darjeeling should be made class tourism or mass tourism.

Sources:

a) *Sustainable Tourism Development in the Darjeeling Hill Area-TERI*
b) *Ways & Means of Saving the Urban Environment of the Darjeeling Hill Areas From Futher Deterioration-Upendra Mani Pradhan.*

Health and Environment

Health, as defined by the W.H.O. 'is a state of complete physical, mental and social well-being and not merely the absence of disease.' But such a broad definition of health can hardly be covered in this paper, and we will merely try and focus on the scenario of health in the district of Darjeeling taking into consideration the secondary data /facts and figures available at hand. It is obvious and one can hardly deny that some environmental factors are related to health and so an effort will be made to look upon the topic as a whole and try and assess the relationship between the two. And one needs to have an integrated approach if health and or preventive health is to be promoted, considering the pressure on curative health. The word health and environment covers a huge number of topics. For example, diseases like malaria could not be eradicated with the use of DDT and now it is accepted, that, it can only be prevented by working within the environment. Things like safe and clean drinking water, working conditions, urbanisation, industrialisation, growth in slum areas, working conditions, social and cultural habits, fuel and energy needs etc. come within the purview of the close inter-relationship between health and environment. And the difference between the scenario of health in the rural and the scenario of health in the urban areas also come under this heading.

Although health is a universal topic/issue the scenario of health in the Darjeeling hills can safely be said to be different when compared to that of the plains. One main reason is the hilly terrain, which makes remote and rural areas inaccessible for health workers notwithstanding the fact that 74% of the population is concentrated in the rural or *bustee* areas. Besides the health centres in the rural areas are, most of the time, ill equipped to deal with minor ailments and in some they do not even exist. So the rural populations have limited access to the medical institutions because of their remoteness. The other feature of the health scenario of Darjeeling is that most of the time the referral system is flawed. This leads to the crowding up of the secondary and tertiary levels and it isn't very surprising to see patients crowded up in the District Hospitals where one bed is shared by more than two. (See Referral System)

When one looks back on the forgotten past of Darjeeling one finds that this place was initially started as a sanatorium where ailing soldiers could recuperate. Later it was developed as a hill station. And even today because of its reputation it attracts a large number of tourists who hope to spend some time in the salubrious environment of the hills. But what was once developed a hill station for a limited population of 20,000 now supports a staggering population of 7,900,49 in the three hill-subdivision excluding Siliguri sub-division and a population of 106,257 in the Darjeeling Municipality only. In addition to this it supports a tourist population of 10,000 or more every year. So considering the pressure of population on the resources and the fragility of the eco-system of the hills it is a miracle as to how the system is still functioning because by all means it should have collapsed a long time ago.

The pressure of population can actually be directly linked to health hazards or its potentials. Because the larger the population the chances of the deterioration of health becomes more. In the hills every year during the boom of the tourist season, which the locals invariably see as rewards, is actually a major threat to health and environment. Because the tourists apart from bringing business to the hills also bring a host of diseases or actually create such situations as to give birth to the aforesaid. For example tourist could be carriers of deadly diseases like Tuberculosis, sexually transmitted diseases and HIV/AIDS (considering the fact that tourism in Darjeeling has almost become synonymous with prostitution-although there aren't any red-light areas in the hills). And diseases like Kala azar or Filaria and other communicable diseases could also be transmitted to the people within the district.

And during their stay in Darjeeling they not only put pressure on the resources like water, electricity and fuel but also generate a lot of waste for which there is no proper management in the hills. And so this directly affects the environment adversely and so the adverse impact upon environment can thus be said to be an adverse effect on health.

As for HIV/AIDS till date according to Retd. Major K.P.Malla (Indian Red Cross Society, District Aids Control Centre) there are 40 known cases of Aids in the Darjeeling hills. So the point suggestive is that preventive measures should be taken as much as possible to prevent an epidemic in the future with regard to not only diseases like aids but also other communicable diseases.

The crisis of water is a known thing in Darjeeling and none are unaware of it yet no-one has noticed or raised a voice as regards to the placement of the distribution pipelines which actually are buried underground or run along the drains or *nallas*. So the chances of the drinking water getting contaminated and the incidence of water borne diseases increasing are much higher. And the crisis of water also aggravates the health conditions in the hills through various ways. Firstly, due to lack of water flushing of toilets become practically impossible, which means that, sanitation is failing in Darjeeling. Secondly it puts pressure on the women who have to carry water over considerable distances and thirdly people become prone to water borne diseases since the quality of the water is forsaken when the crisis reaches its peak during the dry seasons.

Darjeeling is famous for its three T's, which of course are Tea, Tourism and Timber. We have already seen the impact of tourism on health and environment and when the scene is shifted to tea the scenario becomes even morbid. The tea gardens or the plantation areas, which cover a large portion of the hills are places where there are higher incidences of tuberculosis and other diseases. The use of chemicals like pesticides, insecticides and weedicides etc. and their negative impact has not been fully assessed as yet, and the incidence of tuberculosis is said to be higher among the workers who are engaged in spraying these chemicals in the tea-bushes. The boom in organic farming and plantation, of course, has not yet been full fledgedly introduced in the hills. (See "Tea")

PLANTATION WORKERS IN ASSAM AND DARJEELING

The working environment of plantation workers in the tea gardens of Assam and Darjeeling, or in the coffee and rubber plantations in Karnataka, Kerala and Tamil Nadu are abysmal. Although the State Plantation Act lays down certain stipulation, these are rarely adhered to. A recent survey of tea gardens carried out by Samarjit Jana of AIIHPH in 1989 found that:

- The housing facilities were in direct violation of the Plantation Act. There were also no toilets or sources of potable drinking water.
- No medical facilities were available to the workers
- The smaller tea gardens rarely allowed the workers the stipulated benefits for illness and other leave facilities. Such services as canteens, creches and recreational facilities remained on paper alone.
- As the work is based on a piece-rate system, workers were compelled to work long hours.
- Without footwear in the cold and wet climate, the workers often developed fissures on their feet that went untreated. Women often contracted hoookworm, which in turn caused prolonged anaemia.
- Despite the fact that most of the tea gardens were located in the goitrous belt, no iodine was distributed as a preventive measure.

Pesticide poisoning is becoming a reality not only for sprayers but for people living in close proximity to areas which are continuously sprayed with pesticides. In 1975, for instance, 200 people in forty villages in Karnataka were crippled and their locomotion impaired when they consumed fish and crabs collected from the nearby rice fields that had been sprayed with parathion and endrin. The epidemic of epilepsy in thirty-six villages of Uttar Pradesh was shown to be the result of food contaminated by BHC. Similarly, agricultural labourers and plantation workers are continuously at risk, living as they do in close proximity to fields treated with pesticides. Furthermore, belonging as they do to the unorganised sector, agricultural labourers and plantation workers are not projected with safety gear such as gloves, boots, masks and respirators. In fact, it is believed that 50 per cent of all workers do not wear any protective gear at all.

Source: State of India's Health-Voluntary Health Association of India

The shortage of firewood or in other words fuel and energy needs also poses as a major threat to the health of women in the rural areas. In the face of firewood shortages, not only are women forced to change the food habits of their families (Bina Agarwal, 1989), but they also tend to sacrifice their own nutritional intake in order to provide more for the family, often missing meals altogether. This, during pregnancy when they should in fact be increasing their intake of calories, results in women becoming anaemic. Anaemia has a profound impact on health as it lowers resistance to fatigue

and disease and affects the working capacity of a person. In addition, it increases the risk of death during childbirth. (State of India's Health-VHAI) And also a large percentage of women in the rural areas also work as agricultural labourers and in some rural areas in the hills the women also have to collect and carry water over some considerable distances. So the status allotted to women and the demand that is placed upon them has plays a major role in the status of health of the women.

Alcoholism and Drug addiction have become major threats to the home environment and to health. These conditions have aggravated health conditions because they result in the increase in domestic violence resulting in dysfunctional families. It has also resulted in the increase in the number of crime rates. It compounds the condition of malnutrition as chronic alcoholics and drug addicts suffer from malabsorption of major nutrients. It aggravates the condition of poverty, leads to higher incidence of liver disorders and communicable diseases like AIDS, Hepatitis, Tuberculosis etc because of the intravenous use of drugs.

Vehicular pollution is another challenge of these days especially the urban areas. With the increase of population and the attraction of the tourists the number of vehicles are rising at an alarming rate, which not only threats the health and environment but also has started clogging the small roads of the hills. Accidents on roads is another factor, which is these days affecting the people by and large. According to the 'Reproductive and Child Health Project for Darjeeling Municipal Town, April 1998,' around 20.3% of the population suffer from Arterial Respiratory Infection.

The latest development in the hills is the building of the Teesta Dam in the river Teesta. (See Details-Teesta Dams) is now posing as major threat to the environment and health of Darjeeling. According to the Voluntary Health Association of India-'State of India's Health' there is an increased incidence of Vector diseases like malaria and filaria during and after the construction of river valley projects. And although the complexity of changes cannot be grasped totally one perceptible change is the rise in the water table and thus increased alkalinity, which has a direct bearing on the health status of the population. Changes can be detected in the trace elements (copper, molybdenum, zinc, magnesium and fluorides) that are absorbed in foodstuff, leading to copper fested in malnutrition, anaemia and skeletal fluorosis. These have been empirically verified in the command area of Nagarjunasagar in Andhra Pradesh, in areas adjacent to Hospet dam in Karnataka, and in Coimbatore within a 30 Km radius from the Parambikkulam Aliyar dam.

Changes in the riverine system and impounding (containing) of water results in water-based hazards:

- Water-borne transmission (i.e. transmission that occurs when the pathogen is contained in the water which is consumed, leading to diarrhoea or dysentry)
- Water-based transmission (when the pathogen has an aquatic host, such as schistosomiasis)
- Water-related insect vector transmission (i.e. transmission by insects breeding in or near water, precipitating malaria, encephalitis, filariasis or Kala-azar)

(Source: State of India's Health-Voluntary Health Association of India)

Thus one can see that the threats and challenges to health and its services are many and judging by them they seem dismal. And one can at least get a picture of the scenario of health as it exists the district of Darjeeling although the picture presented in this paper isn't very detailed due to constraint of time and resources. But more or less an overall picture, as much as possible, has been depicted here.

Referral System

Objective of the Referral System

Patients with complex health problem requiring investigations and treatment need to go through a well functioning referral system, which is an institutional set up where health care services are provided in a systematic way at the appropriate level.

This referral mechanism requires to be established with the aim to link up the multi-tier health care system to combine preventive, promotive, curative and specialised clinical services. The community must have access to the services in all the tiers particularly the primary care level as it is the first contact point for treating common diseases. Thereafter technically more complex health problems are taken care of by each successive health care level which is equipped with superior quality of health care support. Patients will develop confidence in such a referral system, as they will understand that their health needs will be taken care of properly and that they will be referred to appropriate level as per their medical needs.

The Current Referral System:

At present the Referral System in the State is not functioning well. This is also true for most parts of India. Patients, in the absence of viable referral chain, seek treatment directly at the higher levels for minor illness resulting in the under utilization of the primary care level on one hand and the over loading of the higher tier particularly tertiary care levels on the other hand.

A good Referral System in effect will minimize bypassing of the lower tiers of the health care deliver system. For this to become viable the system would necessitate the following measures

- Service norms for the primary, secondary and tertiary level to be well defined.
- The community to have the confidence that the patients will be promptly transferred to technically higher tiers of health care when needed.
- Clinical services at each level to be of quality that will satisfy the needs of the community.

- Awareness both among the beneficiaries as wil as the health care providers regarding types of services available at each level.
- A well laid down procedure to ensure that bypassing of lower tiers does not occur.

In the institution under the project the Referral System would be strengthened by the following.

a) Upgrading and renovating the hospital buildings to provide adequate space for services.
b) Updating and upgrading managerial and clinical skills of medical and paramedical personnel through appropriate programme.
c) Providing ambulance for transporting critically ill patients.
d) Installing phone, fax and /or radio communication.

Measures to strengthen the Referral System would include:

- Introduction of the use of Referral and Feedback Cards implementation of administrative guidelines and Referral Protocols.
- Establishing incentives for the patients to follow the referral chain.
- Communication and linkages between the first referral hospitals and primary care to be ensured by means of intensive trainings and outreach visits.
- An intensive IEC programme to be conducted to target both providers and health care seekers.
- Monitoring of the Referral System through the District Health Committees.

Referral and Feed Back Cards:

This when introduced will provide the patient direct access for services to the referred hospital where the patient will report with the referral card to the unit concerned without going through the Out Patient Department (OPD). The patient need not procure a fresh rupee1/- ticket and after the necessary treatment or investigations at the referred hospital he will report back to the first facility with the feed back care.

This manual of referral guidelines contain administrative and referral protocols.

Administrative guidelines indicate:

- Transportation (ambulance) facilities.
- Operational hours of the project hospitals.
- Referral and feed back cards.
- Incentives to the patients.

Referral protocols are given below:

- Dissemination of referral guidelines.
- Training of staff.
- Holding clinical meetings in the hospitals.
- Serving the community through outreach visits by specialists.

Strengthening the Referral System will be done through the District Health Committees who have the following responsibilities:

a) To see that Zones and chains of referral as identified in this manual to strictly adhered to.
b) Monitoring the referral system through data collection and analysis from the referral register in the hospitals.
c) Coordinating technical support to the primary level.
d) Need based transport mobilization, to take the assistance of NGOS in these aspects.
e) A strong IEC campaign to make in order that the referral system gets attention of both the beneficiaries and providers of training will form a major part in getting the health care providers of all the three tiers to be formalized with functioning of the referral system.

Norms of Services

The existing clinical service facilities available in the Secondary Level Hospitals are not at the desired level and have failed to meet the demands of the growing population and play a supportive and complimentary role to the primary health care system. The reasons are many and due to fault of no single element. They may be attributed to paucity of medical professionals in the health facilities as compared to large turnover of patients, absence of updating and upgrading of clinical knowledge and skill of doctors and paramedics for want of effective in-services hands on training programme against the scenario of ever growing medical science. It is not surprising to find that even for simple surfgical interventions and diagnostic services, the poor people have to rush to big hospitals or medical colleges at the tertiary level, thus overcrowding these institutions unnecessarily and interfering with their normal functioning of research and training activities while the middle tier remain practically under-utilized. The people perceive these hospitals as providing poor quality service because of non-availability of required clinical facilities. Thus, in order to gain the confidence of the community, the clinical service currently available in the project hospitals have been proposed to be upgraded/developed through enhancement of clinical skill and expertise of the doctors as well as paramedics on a need – based criterion. It is desirable that clinical care is to be provided in the Secondary Level Hospitals by a multi-tier health

care approach system and will have within its purview the curative and special care aspects of the patients apart from providing preventive services.

The primary health centres are expected to be the first line of medical care unit where the patients attend with common disease problems to receive the clinical curative service. More complex problems requiring higher clinical attention from the health care providers are tackled at the next higher level of referral units. Each successive level should provide technically higher quality of clinical service and ought to be better equipped and well staffed. Therefore, the higher tier by offering more technically improved service are likely to give the clinical support needed for lower tiers. But this is not currently reflected in the hospital performance in true reality as there is no well defined service schedule taking care of disease problems in each tier of hospital.

Source:Referral Manual, October 1997,
West Bengal Health Sector Development Programme,
Health &Family Welfare Department.

HEALTH FUNCTIONARIES/HEALTH UNITS OF DARJEELING GORKHA HILL COUNCIL (D.G.H.C.) AND SILIGURI MAHAKUMA PARISHAD

Administrative Set up:-

Health majority of the portion has been handed over to the Darjeeling Gorkha Hill Council (D.G.H.C.) by the Government of West Bengal as per accord of 1988-89. In D.G.H.C. areas, the Health Set up is as follows:-

DARJEELING GORKHA HILL COUNCIL (D.G.H.C.) DEPTT. OF HEALTH & F.W.

1. Executive Councillor is in charge of the Department.
2. Secretary Health, D.G.H.C is the departmental head, D.D.O. and appointing authority of all categories of Staff of Health under D.G.H.C.
3. In the form of a Directorate, D.G.H.C. has got Council Chief Medical Officer of Health and under Council C.M.O.H. there is one U.D.C., L.D.C. and one Peon. Council C.M.O.H. looks after the day to day administration of the transferred units of health under D.G.H.C. keeping close and constant liasion with D.G.H.C. Health Department's Officials.

The council C.M.O.H. does not have any financial powers/obligations which is possessed by Health Secretary D.G.H.C.

The C.M.O.H., Darjeeling who is also the Council C.M.O.H. bridges the gap between the Council and the State. Majority of staff of the Office of C.M.O.H., Darjeeling are also engaged as and when necessity arises to work for the Health set up of the Council.

The following Health Units are funded by D.G.H.C., Health Deptt. Except medicines and partial transport provisions.

HEALTH UNITS:

1. District Hospital, Darjeeling-308 beds.
2. S.D. Hospital, Kalimpong-370 beds (including Leprosy)
3. S.D Hospital, Kurseong-100 beds.
4. Rural Hospital, Bijanbari-17 beds (declared for 30 beds but not functioning).

BLOCK P.H.C.s:

1. Sukhiapokhri BPHC-25 beds. Under this Block PHCthere are 3 PHCs and 25
2. Takdah BPHC – 25 beds. Under this Block PHC there are 2 PHCs and 15 Health Sub-Center (all functioning).
3. Mirik BPHC-15 beds. Under this Block PHC there are 2 PHCs and 10 Health Sub-Centres. (all functioning).
4. Sukna BPHC-15 beds. Under this Block PHC there are 2 PHCs and 16 Health Sub-Centres. (all functioning)
5. Pedong BPHC-25 beds. Under this Block PHC there are 2 PHCs and 16 Health Sub-Centes (all functioning).
6. Rambhi BPHC- 10 beds. Under this Block PHC there are 2 PHCs and 19 Health Sub-Centres (all functioning).
7. Gorubathan BPHC-20 beds. Under this Block PHC there are 2 PHCs and 12 Health Sun-Centres (all functioning).

Source: DMO

Public Health
Medical Institutions available in the District of Darjeeling

PUBLIC HEALTH							
Medical facilities available in the district of Darjeeling							
Year	MEDICAL INSTITUTIONS						
	Hospitals	Health Centres	Clinics	Dispensaries	Total	Total beds	Doctors
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1995	8	30	4	19	61	1970	221
1996	8	30	4	19	61	1979	245
1997	11	32	6	27	76	2382	235
1998	12	31	6	27	76	2382	237
1999	12	31	6	27	76	2382	238

Source:Dy.Chief Medical Officer of Health-I,II

One thing that is visible from the above table is that the growth in infrastructure/Medical Institutions has not kept up in pace with the growth in population (population taken from the Provisional Population Census). There has been an increase in the number of medical institutions from the year 1997 onwards except for the negative growth in the number of health centres from 32 in 1997 to 31 in 1998. The population figures for the district stands at 1,605,900, and the number of hospitals are 12 in number in the year 1999, health centres are 31 in number, clinics are 6 in number and dispensaries are 27. The total number of beds for the district is 2382 and the total numbers of doctors are 238. So hypothetically speaking a total of 76 health institutions with 2382 beds and 238 doctors are supporting a population of 1,605,900. And hence the disparity is easily visible.

When we compare the number of medical institutions to the number of patients treated we see that from the year 1995 to 1997 the total number of patients has gone up by 73% from the year 1997 to 1998. And here again we see that the growth in infrastructure has not been keeping up with the growth in population. In the year 1999 a total of 732193 patients were treated in 76 medical institutions 45.5% of the total population were treated in the medical institutions during that year.

PUBLIC HEALTH

Medical facilities available in the district of Darjeeling

MEDICAL INSTITUTIONS

Sub-Division and C.D. Block/M/M.C.	Hospitals		Health Centre		Clinics		Dispensaries		Total		Total Beds		Doctors	
(1)	(2)		(3)		(4)		(5)		(6)		(7)		(8)	
Year	98	99	98	99	98	99	98	99	98	99	98	99	98	99
Sadar Sub-division	3	3	10	10	3	3	8	8	24	24	447	447	50	49
Darjeeling Municipality	3	3	-	-	3	3	2	2	8	8	358	358	30	30
Darjeeling Pulbazar	-	-	3	3	-	-	2	2	5	5	19	19	6	6
Sukhiapokhri-Jorebungalow	-	-	4	4	-	-	2	2	6	6	41	41	9	8
Rangli-Rangliot	-	-	3	3	-	-	2	2	5	5	29	29	5	5
Kalimpong Sub-Division	2	2	9	9	1	1	8	8	20	20	540	540	44	43
Kalimpong Municipality	2	2	-	-	1	1	1	1	4	4	470	470	26	26
Kalimpong I	-	-	3	3	-	-	2	2	5	5	18	18	5	4
Kalimpong II	-	-	3	3	-	-	2	2	5	5	24	24	7	7
Gorubathan	-	-	3	3	-	-	3	3	6	6	28	28	6	6
Kurseong Sub-division	3	3	5	5	1	1	4	4	13	13	472	472	37	36
Kurseong Municipality	2	2	-	-	1	1	1	1	4	4	434	434	25	25
Kurseong	-	-	3	3	-	-	2	2	5	5	19	19	7	6
Mirik	-	-	2	2	-	-	-	-	2	2	4	4	3	3
Mirik Municipality	1	1	-	-	-	-	1	1	2	2	15	15	2	2
Siliguri Sub-Division	4	4	7	7	1	1	7	7	19	19	923	923	106	110
Siliguri Municipal Corporation	1	1	-	-	1	1	1	1	3	3	250	250	42	42
Maligara	1	1	2	2	-	-	2	2	5	5	565	565	42	45
Naxalbari	1	1	1	1	-	-	2	2	4	4	60	60	11	11
Kharibari	1	1	2	2	-	-	1	1	4	4	36	36	6	6
Phansidewa	-	-	2	2	-	-	1	1	3	3	12	12	5	6

Source:Dy.Chief Medical Officer of Health-I,II

Patients treated in hospitals and dispensaries in the district of Darjeeling

			Number
Year/Sub-Div & C.D.Block /M/M.C.	indoor	outdoor	total
1995	44933	171021	215954
1996	454232	179118	224541
1997	46104	181804	227908
1998	77295	691950	769245
1999	74351	657842	732193

Patients treated in hospitals and dispensaries in the district of Darjeeling						
Year/Sub-Div & C.D.Block/M/M.C.	indoor		outdoor		total	
	1998	1999	1998	1999	1998	1999
(1)	(2)		(3)		(4)	
Sadar Sub-Division	16128	17074	67432	70140	83560	87214
Darjeeling Municipality	12356	12765	40739	41196	53095	53961
Darjeeling-Pulbazar	-	1086	-	14051	-	15137
Sukhiapokhri-Jorebungalow	317	418	19544	9197	19861	9615
Rangli-Rangliot	3455	2805	7149	5696	10604	8501
Kalimpong Sub-Division	10780	9857	102251	82591	113031	92448
KalimpongMunicipality	8710	8528	47222	48248	55932	56776
Kalimpong I	321	184	17982	13486	18303	13670
Kalimpong II	922	62	14776	1150	15698	1212
Gorubathan	827	1083	22271	19707	23098	20790
Kurseong Sub-Division	6328	5496	35818	13921	42146	19415
Kurseong Municipality	4423	4094	1733	1991	6156	6085
Kurseong	755	-	13393	-	14148	-
Mirik	1150	1402	20692	11930	21842	13330
Mirik Municipality						
Siliguri Sub-Division	44059	41924	486449	491190	530508	533114
Siliguri Municipal Corp.	28529	28990	134734	167806	163263	196796
Maitgara}	899	592	66404	52482	67303	53074
Naxalbari	8671	6112	131556	100379	140227	106491
Kharibari}						
Phansidewa	5960	6230	153755	170523	159715	176753

Source:Dy. Chief Medical Officer of Health-II

Among the four sub-divisions, Darjeeling Sadar has the highest number of Medical Institutions, 447 in 1999 and Siliguri Sub-Division has the highest number of beds and doctors 923 and 110 respectively in the year 1999.

Among the hill sub-divisions i.e. excluding the Terai or the plains, Kalimpong Municipaltiy has the highest number of beds-540 in 1998-99 with a total of 20 Medical Institutions followed by Sadar Sub-Division-447 beds.

Sadar Sub-Division: has a total of 24 Medical Institutions, with 3 Hospitals, 10 Health Centres, 3 Clinics and 8 Dispensaries. The Hospitals are concentrated in Darjeeling Municipaltiy area only and there are none in the blocks which means that the secondary health centres are concentrated in this area only.

Darjeeling Municipality: has a total population of 3,88,321. It has a total of 8 Medical Institutions with 3 Hospitals, 3 Clinics, and 2 Dispensaries. The number of beds are 358 in total and there are a total of 30 Doctors, which is the highest within the sub-division.

But then it should be kept in mind that the referral system is not functioning well or flawed. And patients, in the absence of a viable referral chain system, seek treatment directly at the higher levels for minor ailments resulting in the under utilization of the primary health centres on the one hand and over loading or putting pressure on the higher tiers of the referral system especially the secondary and the tertiary levels on the other.

The population for Darjeeling Municipality stands at 106,257 in the year 2001 and a total of 87,214 patients were treated in the year 1999 which means that 82% of the population were treated during the year-which of course cannot be held true-since the referral system has not been accounted for. But then the ratio between the number of medical Institutions and the population seems disproportionate.

The distance to North Bengal M.C.H. is 80 km.

Darjeeling Pulbazar: Darjeeling Pulbazar is basically a rural area. It has a staggering population of 115,821 but it has a total of 5 Medical Institutions and 19 beds only. The total number of patients treated in the year 1999 is 53961which means that 46.5% of the total population of the area were treated in the medical institutions.

Distance to Darjeeling D.H. is 35 km and to North Bengal M.C.H. 8 km.

Sukhiapokhri-Jorebuingalow: There are no hospitals and clinics in this area but it has a total of 4 Health Centres and 2 Dispensaries, a total of 19 beds and 8 doctors in the year 1999. This area too has a large population of 1,00,674. The total

number of patients treated has gone down by 51.5% from the year 1998 to 1999 and only 9.5% of the total population were treated in the medical institutions in the year 1999.

Distance to Darjeeling D.H. is 23 km and to North Bengal M.C.H. is 80 km.

Rangli Rangliot: is a rural area and has a population of 64,296. There are no Hospitals here either. It has 3 Health Centres and 2 Dispensaries and a total of 5 doctors and 41 beds. The number of patients treated has gone down by 19.8% from the year 1998 to 1999. A total of 13.2% patients were treated in the year 1999.

Distance to Darjeeling D.H. is 35 km and 80 km to North Bengal M.C.H. 80km.

Kalimpong Sub-Division: has a total of 20 Medical Institutions with 2 Hospitals, 9 Health Centres, 1 Clinic, 8 Dispensaries, a total of 540 beds and 43 doctors in the year 1999. Here also the Hospitals are concentrated in the municipality are only and there are none in the blocks. The area has a total population of 2,25,143 and a total of 92448 patients were treated in the year 1998 which means that 41% of the total population were treated in the year. The number of patients treated has gone down by 18.2% from the year 1998 to 1999.

Kalimpong Municipality: has a total of 4 Medical Institutions, with 2 Hospitals, 1 Clinic and 1 Dispensary and a total of 540 Beds and 43 Doctors in the year 1999. It has a total population of 42,980which is quite less compared to the population of Darjeeling Municipality. The total number of patients treated in the year 1999 is 56776. This is quite unusual since the number of patients treated is higher than the total population of the area. This could be taken as an indicator of the non-functioning referral system.

Distance to North Bengal M.C.H. is 70 km.

Kalimpong I: has a total of 5 Medical Institutions with 3 Health Centres, 2 Dispensaries, a total of 18 Beds and 4 Doctors in the year 1999. This area has a total population of 67,672 which higher than that of Kalimpong Municipality. The number of patients treated in the year 1998-99 is 18303 and 13670 respectively which is 27% and 20% respectively, which substantiates the point made earlier (see Kalimpong Municipality) that the referral system is not functioning or the Primary Health Centres are being under utilised.

Kalimpong II: has a total of 5 Medical Institutions with 3 Health Centres and 2 Dispensaries (same as that of Kalimpong I) a total of 24 Beds and 7 Doctors which is higher than that of Kalimpong I. The area has a total of 60,216. The total number of patients treated in the year 1998 is 15698 and 1212 in the year 1999, which means that a 26% and 2% of the total population of the area were treated during these years. The number of patients being treated has gone down by 92.2% from the year 1998 to 1999.

Gorubathan: has a total of 6 Medical Institutions, with 3 Health Centres, 3 Dispensaries, and a total of 28 beds (higher than Kalimpong I and II) and a total of 6 Doctors (lesser than Kalimpong I and II). The total population stands at 54,275 (lesser than that of Kalimpong I and II). A total of 23098 i.e. 42% in 1998 and 20790 i.e. 38% in 1999 were treated in the Medical Institutions. This is higher than that of Kalimpong I and II, which could mean that the population of Kalimpong I and II are availing of the facilities of Kalimpong Municipality and Gorubathan. The reason behind this could be assumed to (1) that the Medical Institutions or Primary Health Centres are not functioning well or (2) the Medical facilities in Kalimpong Municipality and Gorubathan are better which in either case means that the primary health centres are not functioning properly or are being under utilised. This also means that the Referral system is not functioning.

Kurseong Sub-Division: has a total of 13 Medical Institutions with 3 Hospitals, 5 Health Centres, 1Clinic and 4 Dispensaries. It has a total of 472 beds and 36 Doctors in the year 1999. The area has a total population of 1,76,585. The total number of patients treated in the year 1998 is 42146 i.e. 23.8% and 19415i.e.10.9%in the year 1999 which is quite less than Kalimpong Sub-Division and Darjeeling Sadar.

Distance from Sonada to Darjeeling D.H. 17km and distance from Sonada to North Bengal M.C.H. 80km.

Referral Chains									
District: Darjeeling									
Primary Health Center	Block PHC	Distance in km to	Rural Hospital	Distance in km to	SD/SG Hospital	Distance in km to	District Hospital	Distance in km to	Tertiary Hospital
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
			Bijanbari RH	-	-	35km	Darjeeling DH	80	North Bengal M.C.H.
Lodhama	-	-	-	-	-	75km	Darjeeling DH	80	North Bengal M.C.H.
	Takdah	-	-	-	-	35km	Darjeeling DH	80	North Bengal M.C.H.
Sinrimtam	-	-	-	-	-	35km	Darjeeling DH	80	North Bengal M.C.H.
Takling	-	-	-	-	-	35km	Darjeeling DH	80	North Bengal M.C.H.
	Sukhia-pokhri	-	-	-	-	55km	Darjeeling DH	80	North Bengal M.C.H.
Sonada	-	-	-	-	-	23km	Darjeeling DH	80	North Bengal M.C.H.
Pokhriabong	-	-	-	-	-	17km	Darjeeling DH	80	North Bengal M.C.H.
Ghoom	-	-	-	-	-	31km	Darjeeling DH	80	North Bengal M.C.H.
					Kalim-pong SDH	-	-	70	North Bengal M.C.H.
	Rambi	-	-	40km	Siliguri SDH	-	-	20	North Bengal M.C.H.

Referral Chains									
District: Darjeeling									
Primary Health Center	Block PHC	Distance in km to	Rural Hospital	Distance in km to	SD/SG Hospital	Distance in km to	District Hospital	Distance in km to	Tertiary Hospital
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Santhar Samalbong	-	-	-	70km	Kalimpong SDH	-	-	70	North Bengal M.C.H.
Sherpagaon	-	-	-	30km	Kalimpong SDH	-	-	70	North Bengal M.C.H.
Teesta Bazar	-	-	-	15km	Kalimpong SDH	-	-	70	North Bengal M.C.H.
Pedong	-	-	-	30km	Kalimpong SDH	-	-	70	North Bengal M.C.H.
Geetdubling	-	-	-	32km	Kalimpong SDH	-	-	70	North Bengal M.C.H.
	Goru-bathan	27km	Mal RH	-	Kalimpong SDH	-	-	70	North Bengal M.C.H.
Jaldhaka		45km	Mal RH	70km	Siliguri SDH	-	-	20	North Bengal M.C.H.
	Mirik	-	-	-	-	-	-	30	North Bengal M.C.H.
Sourani-Basti	-	-	-	40km	Siliguri SDH	-	-	20	North Bengal M.C.H.
Duptin	-	-	-	-	-	50km	Darjeeling DH	80	North Bengal M.C.H.
Bagora	-	-	-	15km	Kurseong SDH	-	-	45	North Bengal M.C.H.
Sitton	-	-	-	28km	Kurseong SDH	-	-	45	North Bengal M.C.H.
	Sukna	-	-	-	-	-	-	15	North Bengal M.C.H.

Source: Referral Manual, October 1997, West Bengal Health Sector Development Programme, Health and Family Welfare

Kurseong Muinicipality: has a total of 4 Medical Institutions, with 2 Hospitals, 1 Clinic, 1Dispensary, a total of 434 Beds and 25 Doctors. The area has a total population of 40,067 and a total of 6085 i.e. 15.1% of the total population was treated in the year 1999.

Kurseong: has a total of 5 Medical Institutions with 3 Health Centres and 2 Dispensaries, has a total of 19 Beds and 6 Doctors. The area has a total population of 85,109 and a total of 14148 i.e. 16% were treated in the year 1998.

Mirik: is a rural area. It has a total of 2 Medical Institutions with 2 Health Centres only, a total of 4 Beds and 3 Doctors. The area has a total population of 42,230 and 31.5% or 13330 patients were treated in the year 1999. Compared to the population of the area the number of Medical Institutions is quite less.

Distance to North Bengal M.C.H. is 30 km.

Mirik Municipality: has a total of 2 Medical Institutions with 1 Hospital and 1 Dispensary, a total of 15 Beds and 2 Doctors. The total population of the area is 9179.

Siliguri Sub-Division: This area is called the Terai or the plains. The area has a total of 19 Medical Institutions with 4 Medical Institutions, comprising of 4 Hospitals, 7 Health Centres, 1 Clinic, 7 Dispensaries which stands as the highest among the four sub-division. But this is justified when we consider the total population which stands at 8,15,851 and also the fact that the Tertiary Hospital or North Bengal M.C.H. is located in this sub-division. A total of 533114 or 65.3% of the total population of the sud-division were treated here. Unlike the other hill-subdivisions there are hospitals in every block except for Phansidewa.

Siliguri Municipal Corp: has a total of 3 Medical Institutions comprising of 1 Hospital, 1 Clinic, 1 Dispensary. It has a total of 250 Beds and 42 Doctors. The area has a total population of 2,84,615 and 19676 or 69% of the total population were treated in the year 1999.

Matigara: has a total of 5 Medical Institutions with 1 Hospital, 2 Health Centres and 2 Clinics with a total of 565 Beds and a total of 45 Doctors in the year 1999. The total population of the area is 1,26,704.

Naxalbari: has a total of 4 Medical Institutions with 1 Hospital, 1 Health Centre and 2 Dispensaries, a total of 60 Beds and 11 Doctors. The total population of the area is 1,44,942.

The total population in both these areas (i.e. Matigara and Naxalbari taken together) is 271646 and the total percentage of patients treated in the years 1998 and 1999 comes to around 51.2% and 39.2% respectively.

Kharibari: has a total of 4 Medical Institutions with 1 Hospital, 2 Health Centres and 1 Dispensary, a total of 36 Beds and 6 Doctors. The total population of the area is 88,206.

Phansidewa: has a total of 3 Medical Institutions with 2 Health Centres and 1 Dispensary. There are no Hospitals in this area. It has a total of 12 Beds and 6 Doctors. The total population of the area is 171,384.

The total number of patients treated in the year 1998 and 1999 (i.e Kharibari and Phansidewa taken together) stands at 61% and 68% respectively. The sum total population of these areas is 259590.

N.B. the analysis is based mostly on figures from the Statistical data, which covers only government health institutions and does not include private health institutions. A general picture as to the ratio between the population of the particular area and the number of medical institutions in that area has been depicted by way of percentages that have been treated in the area. Thus the referral chain system has also been tried to cover here. And also the population figures are based on the provisional population of the 2001 census. With regards to Private Clinics it can only be mentioned here that Siliguri Sub-Division has witnessed a considerable growth in the number of Private Clinics.

Number of Family Welfare Centres in the District of Darjeeling

Number

	Family Welfare centre			Total no. of cases treated				Immuni-sation
Year/Sub-Div &	Public	Private	Total	Vasec-tomy	Tubec-tomy	I.U.D.	Others	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1995-96	42	18	60	15	5892	1827	-	-
1996-97	42	18	60	56	8838	2956	-	-
1997-98	42	18	60	-	5065	713	-	-
1998-99	42	30	72	2	6865	2344	-	85807
1999-2000	43	30	72	1	4984	2437	-	75749

Number of Family Welfare Centres in the district of Darjeeling

Year/Sub-Div & C.D.Block/M/M.C.	Family Welfare Centre					
	Public		Private		Total	
	98-99	99-00	98-99	99-00	98-99	99-00
	(1)		(2)		(3)	
Sadar Sub-Division	15	15	3	3	18	18
Darjeeling Municipality	4	4	3	3	7	7
Darjeeling-Pulbazar	3	3	-	-	3	3
Sukhiapokhri-Jorebungalow	4	4	-	-	4	4
Rangli-Rangliot	4	4	-	-	4	4
Kalimpong Sub-Division	10	10	3	3	13	13
KalimpongMunicipality	1	1	3	3	4	4
Kalimpong I	3	3	-	-	3	3
Kalimpong II	3	3	-	-	3	3
Gorubathan	3	3	-	-	3	3
Kurseong Sub-Division	7	7	1	1	1	1
Kurseong Municipality	1	1	1	1	1	1
Kurseong	3	3	-	-	-	-
Mirik	2	2	-	-	-	-
Mirik Municipality	1	1	-	-	-	-
Siliguri Sub-Division	10	10	23	23	33	33
Siliguri Municipal Corp.	1	1	23	23	24	24
Maitgara}	2	2	-	-	2	2
Naxalbari	3	3	-	-	3	3
Kharibari}	1	1	-	-	1	1
Phansidewa	3	3	-	-	3	3

Number of Family Welfare Centres in the district of Darjeeling

Year/Sub-Div & C.D.Block/M/M.C.	Total no. of cases treated								Immunisation	
	Vasectomy		Tubectomy		I.U.D.		Others			
	98-99	99-00	98-99	99-00	98-99	99-00	98-99	99-00	98-99	99-00
	(4)		(5)		(6)		(7)		(8)	
Sadar Sub-Division	-	-	1602	1400	1401	1301	-	-	22433	22825
Darjeeling Municipality	-	-	1016	1009	1223	1102	-	-	5831	6954
Darjeeling-Pulbazar	-	-	232	286	60	51	-	-	7950	7068
Sukhiapokhri-Jorebungalow	-	-	150	52	16	46	-	-	4381	5377
Rangli-Rangliot	-	-	204	53	102	102	-	-	4271	3426
Kalimpong Sub-Division	2	1	1178	1153	513	586	-	-	15002	12958
KalimpongMunicipality	1	1	371	428	269	301	-	-	3909	3518
Kalimpong I	1	-	342	234	46	126	-	-	4431	3877
Kalimpong II	-	-	237	273	80	52	-	-	4018	3633
Gorubathan	-	-	228	218	118	107	-	-	2644	1930
Kurseong Sub-Division	-	-	828	818	300	337	-	-	9292	9290
Kurseong Municipality	-	-	197	197	175	238	-	-	2521	3106
Kurseong	-	-	243	243	59	50	-	-	4515	4294
Mirik	-	-	378	378	66	49	-	-	2256	1890
Mirik Municipality	-	-	-	-	-	-	-	-	-	-
Siliguri Sub-Division	-	-	3267	3267	130	213	-	-	39080	30676
Siliguri Municipal Corp.	-	-	787	787	61	138	-	-	6320	7159
Maitgara}	-	-								
Naxalbari	-	-	1131	761	58	67	-	-	16699	10803
Kharibari}	-	-								
Phansidewa	-	-	1349	209	11	8	-	-	16061	12714

Source:Dy. Chief Medical Officer of Health-III Darjeeling

Number of Family Welfare Centres in the District of Darjeeling.

In the District the total number of Family Welfare Centres is 73 in number in the year 1999-2000. There has been an increase of only 1 Public Family Welfare Centre in the year 1999-2000. But the number of Private Family Welfare Centre there has been an increase of 40% i.e. from 1997-98 to 1999-2000 there has been an of 12 Family Welfare Centres.

The highest number of Vasectomy cases (a surgery performed on males for birth control) treated in the year 1996-97 is 56 in number, but from the year 1998-2000 the number in Vasectomy cases have gone down to 1 only which is. in other words, negligible. This could be interpreted as-the participation from the side of the males with regard to family planning has gone down considerably. And besides this could be a lack of incentives on the other hand and also birth control through the use of Condoms has not been included.

But comparatively, the number of Tubectomy (a surgery performed on females) has remained more or less constant but this too has gone down in the year 1999-2000.

Similarly for I.U.D. (Intra Uterine Devices) the number is more or less constant and in fact the number has gone up in the year 1999-2000 which is 2,437.

The immunisation programme covered is the highest for the year 1998-99. For the year 1998-99 the number is 85807 and for the year 1999-2000 is 75749.

Among the three Hill Sub-Divisions, **Darjeeling Sadar** has the highest number of Family Welfare Centres with 15 Public and 3 Private-a total of 18 as against 13 for Kalimpong Sub-Division, 10 Public and 3 Private and Kurseong Sub-Division has a total of 9 Family Welfare Centres with 8 Public and 1 Private.

Among the four Sub-Divisions, Siliguri Sub-Division has the highest number of Family Welfare Centres with 10 Public and 23 Private-a total of 23.

Total Number of Cases Treated: The total number of cases treated (Tubectomy, Vasectomy and I.U.D.) within the three Hill Sub Division is the highest for the Sadar Sub Divison.

Vasectomy =nil or negligible

Tubectomy =1602 in 1998-99 and 1400 in 1999-2000

I.U.D. =1401 in 1998-99 and 1301 in 1999-2000

60% to 70% of these cases were treated in Darjeeling Municipality Family Welfare Centres which could be interpreted as (1) the people in rural areas are not aware or do not practice Family Planning as much as the urban areas. (2) or that the Family Welfare Centres in the rural areas are ill-equipped to treat these cases considering the fact that Private Family Welfare Centres are none in the rural areas.

In **Kalimpong Sub-Division**, the total number of cases treated are as follows:

Tubectomy =1178 in 1998-99 and 1153 in 1999-2000.

Vasectomy =2 in 1998-99 and 1 in 1999-2000 which shows participation of the males in Family planning especially with regard to surgery.

I.U.D. =513 in 1998-99 and 586 in 1999-2000.

But in the Kalimpong Sub-Division the scenario is totally different than that of the Darjeeling Sadar. Firstly the number of Family Welfare Centres are not concentrated in the Municipality area only and they are more or less evenly distributed and balanced among the blocks and unlike Sadar Sub-Division the total number of cases treated is not concentrated in the urban areas only except for I.U.D. cases which is 269 i.e. 52% in 1998-99 and 301 i.e. 51% in 1999-2000. So this means that the Facilities of the Urban areas are not overcrowded or the pressure on the urban Family Welfare Centres are minimised.

For **Kurseong Sub-Division** has a total of 9 Family Welfare Centres (8 Public and 1Private). The total number of cases treated for

Tubectomy =818 in 1998-99 and 725 in 1999-2000.

I.U.D. =300 in 1998-99 and 337 in 1999-2000.

A total of 46.2% of Tubectomy cases was treated in Mirik in the year 1998-99 and 47.4% in Kurseong in the year 1999-2000.

For I.U.D. the highest number of cases treated in Kurseong Municipality 58% in 1998-99 and 71% in 1999-2000.

Siliguri Sub-Division: has the highest number of Family Welfare Centres-a total of 33 and the number of cases treated are as follows:

Tubectomy =3267 in 1998-99 and 1706 in 1999-2000, out of which 41% was treated in Phansidewa in 1998-99. But the number of Tubectomy cases has gone down considerably for the year 1999-2000 by 47.7% for the Sub-Division.

I.U.D. =130 in 1998-99 and 213 in 1999-2000. There has been an increase by 38.9%. 64.7% of these cases were treated in Siliguri Municipality.

The Four Sub-Divisions taken together: -

Sadar Sub-Division has 24.6% of the total Family Welfare Centres and 28% of Tubectomy cases were treated here and 53.3% of the I.U.D. cases were treated here. A decrease of 12% is noticed in the number of Tubectomy cases and a decrease of 7% in the number of I.U.D. cases from the year 1998-99 to 1999-2000.

Kalimpong Sub-Division has 17.8% of the total Family Welfare Centres and 23.1% Tubectomy and 24% of I.U.D. cases were treated here. A decrease of 2.1% is noticed in the number of Tubectomy cases and an increase of 12.4% in the number of I.U.D. cases.

Kurseong Sub-Divison has 12.3% of the total Family Welfare Centres and 14.5% of the Tubectomy cases and 24% of I.U.D. cases were treated here. There has been a decrease of 11.3% in the number Tubectomy cases and an increase of 10.9% in the number I.U.D. cases from 1998-99 to 1999-2000.

Siliguri Sub-Division has 45.2% of the total Family Welfare Centres and 85.9% of Tubectomy and 8.75 of I.U.D. cases were treated here. There has been a decrease of 47.7% in the number of Tubectomy cases and an increase of 38.9% in the number of I.U.D. cases.

So for the district there has been a decrease fo 27.3% in the number of Tubectomy cases and and increase of 3.8% in the number of I.U.D. cases.

Imunisation (Block wise): the total number of persons immunized for the district in the year 1998-99 stands at 85807 and 75749 in the year 1999-200. There has been a decrease of 11.7% in immunisation programmme covered.

Sadar Sub-Division: a total of 30% were immunized in the Sadar Sub-Division in 1999-2000 and there has been an increase of 1.7% in the number of persons immunized from the year 1998-99 to 1999-2000.

Kalimpong Sub-Division a total of 17.1% were immunised in the year 1999-2000 and there has been a decrease of 13.6% in the number of persons immunized from the year 1998-99 to 1999-2000.

Kurseong Sub-Division: a total of 12.2% were immunised and the decrease has been negligible or the number immunised has remained the same or constant.

Siliguri Sub-Division: a total of 40% were immunised here and there has been a decrease of 21.5% in the number of persons immunized from the year 1998-99 to 1999-2000.

Statistical Data of Health for the Darjeeling Municipality only: *Source: Reproductive and Child Health Project for Darjeeling Municipal Town. District:Darjeeling, West Bentgal. April 1998. Department of Municipal Affairs, Government of West Bengal and Darjeeling Municipality.*

Existing Health Facilities		
Sl.No.	Sector/Agency	Health Institution
1	Municipal	I.D.Hospital, Dispensary
2	State Govt.	Sadar/Eden Hospital, T.B. Clinic, P.P.Centre

Humanatarian Status	
Vaccine	Coverage (%)
B.C.G.	60.1
D.P.T.III	55.80
OPVIII	57.30
Measles	26.40
T.T. (Pw)	57.30

Source: Reproductive and Child Health Project for Darjeeling Municipal Town-April, 1998

Vaccine coverage is extremely poor, complete immunization recorded 26.4% T.T. (Pw) coverage is also poor. These should be raised immediately through proper interventions viz. awareness generation (IEC), provision of service facilities, effective surveillance mechanism, and active community support.

Contraception Behaviour	
F.P. Method	%
Permanent	10.2
Temporary	27.0

Contraception coverage is too low requiring boosting up through inputs of IEC, service facilities and convergence. Gender inequity in contraception adoption should also be looked into.

Morbidity Profile by Age (Illness during last 15 days) Morbidityrate (percent)				
Age	<1	1-4	3-4	all age groups total
	8.5	2.0		9

Morbidity of infants seems to be quite high, as also that of all age groups total.

Mortality Profile (vital rates)	
Crude Birth Rate	30.8
Crude Death Rate	17.7
Infant Mortality Rate	46.5
Maternal Mortality Rate	5.7

All the vital rates are requiring adequate health FW interventions IMR value is also high and this should be brought down through specific inputs viz. MH with Neonatal, IEC and the like.

Morbidity by causes

ARI (Arterial Respiratory Infection)	20.3
T.B.	17.4
Diarrhoeal Diseases	15.2
Skin Diseases	04.3
Night Blindness	02.9
Others	39.9

ARI, TB and diarrhoeal diseases are preponderant. Prevalance of night blindness warrants immediate intervention.

Integrated Child Development Schemes (I.C.D.S.)

The National policy for children, enunciated in August 1974 declares children as " a supreme asset of the Nation". The total well being of the children under six years of age with children and nursing mother has been ensured by taking and integrated package of services.

Objectives of the I.C.D.S. SCHEMES.

i. To improve the nutritional and health status of children under six years of age.
ii. To lay the foundation for proper psychological, physical and social development of the child.
iii. To reduce the incidence of mortality, morbidity, mal-nutrition and school drop outs.
iv. To achieve effective co-ordination of policy and implementation among the various departments promoting child development.
v. To enhance the capability of the mother to look after the normal health and nutritional needs of the child through proper nutrition and health education.

The following services are provided to children, pregnant and nursing mothers in ICDS projects ares:

a) Supplementary Nutrition.
b) Immunization.
c) Health Check-up.
d) Referral Services.
e) Nutrition and Health Education.
f) Non-Formal Education.

There are eleven I.C.D.S. Projects in this district. Three of them are at Siliguri Sub-Division and the remaining are in the hill Sub-divisions of the district. The District ICDS Cell is headed by District Programme Officer and has four clerical staff. The main aim of District ICDS Cell is to monitor the ICDS programmes in the district to help and guide the Child Development Project Officers of this district in programme implementation.

The number of ICDS centers, number of supervisors and the number of staff in each center are given below:

Sl.No.	Name of the Project Centres	No.of Centres	No. of Super-visors	No. of Clerical Staff
1	Darjeeling-Pulbazar	148	8	3
2	Mirik	82	5	3
3	Kurseong	63	3	3
4	Sukhiapokhri	92	5	3
5	Takdah	65	3	3
6	Siliguri	100	4	3
7	Siliguri-Naxalbari	125	7	3
8	Khoribari-Phansidewa	196	11	3
9	Kalimpong-I	78	4	3
10	Kalimpong-II	51	3	3
11	Gorubathan	46	2	3

Kalimpong-II and Gorubathan ICDS Project are not functioning. Written and oral Examination has been completed for the selection A.W. worker and helper for the projects. Within a short period the said two projects will start functioning.

Total beneficiaries fo the district are as follows:-

1. Children : 61,000
2. Nursing Mothers : 5,700
3. Pregnant Mothers : 3,350

Two projects are running with local food and the remaining projects are running with CARE assistance.

The above mentioned beneficiaries are getting regular services, such as nutrition feeding, immunization pre-school education etc. from the ICDS.

To implement the programme of ICDS, some problems are being faced which are appended as below:

i. Non-availability of safe drinking water at every Aganwadi Center.
ii. Lack of permanent structure at every Aganwadi centre.
iii. Lack of effective co-ordination between Health and ICDS Department.

Source: Annual Adminsitrative Report of the Darjeeling Collectorate, 1999-2000

Name of ICDS Project	ICDS Project Population in reporting AWs (as per Survey Register)						
	Total Population of AW's (all age			Children			
(1)	(2)			(3)			
	Male	Female		Below 6Months	6Months-1year	1yr-3yrs	3yrs-6yrs
Khoribari-Phansidewa	76818	71967	Male	926	1309	4257	5685
			Female	846	1324	4140	5458
Mirik	22261	212748	Male	234	532	547	1107
			Female	200	421	497	1142
Kurseong	19909	20027	Male	123	161	548	845
			Female	110	173	565	925
Kalimpong I	22595	23792	Male	168	340	625	1990
			Female	205	255	540	1582
Darjeeling Pulbazar	22595	23792	Male	168	340	625	1990
			Female	205	255	540	1552
Rangli Rangliot	10868	10572	Male	193	175	370	62
			Female	143	158	377	64
Siliguri Naxal	49745	49014	Male	510	630	2393	3322
			Female	488	633	2378	3308
Jorebungalow Sukhiapokhri	18922	18971	Male	118	138	570	1092
			Female	92	147	574	1094
Siliguri Municipality	34786	33746	Male	317	366	1772	2309
			Female	326	370	1689	2364
Kalimpong II (Algarah)	15011	14617	Male	163	272	602	970
			Female	178	279	665	967
Gorubathan	16400	16311	Male	199	297	647	1126
			Female	194	375	732	1161

Name of ICDS Project	ICDS Project Population in reporting AWs (as per Survey Register)							
	Reported Births and Deaths			Deaths				Deaths of women during pregnancy and delivery
(1)	(4)			(5)				(6)
	Births	Live Births	Still Births	Below 1yrs	1yr-3yrs	3yrs-6yrs	others	
Khoribari-Phansidewa	Male	76	1	1	0	0	0	0
	Female	60	2	3	3	0	0	
Mirik	Male	4	0	0	0	1	4	0
	Female	11	0	0	0	0	4	
Kurseong	Male	5	0	0	0	0	0	0
	Female	6	0	0	0	0	0	
Kalimpong I	Male	3	0	0	0	0	0	0
	Female	2	0	0	0	0	0	
Darjeeling Pulbazar	Male	15	0	0	0	0	15	0
	Female	10	0	0	0	0	3	
Rangli Rangliot	Male	15	0	0	0	0	0	0
	Female	21	0	0	0	0	0	
Siliguri Naxal	Male	36	2	1	1	0	1	0
	Female	30	1	0	0	0	0	
Jorebungalow Sukhiapokhri	Male	17	3	0	0	0	6	0
	Female	11	0	0	0	0	10	
Siliguri Municipality	Male	32	1	0	0	1	2	0
	Female	23	2	0	0	0	1	
Kalimpong II (Algarah)	Male	23	0	0	0	0	0	0
	Female	16	0	0	0	0	0	
Gorubathan	Male	18	0	0	0	1	1	0
	Female	13	0	2	0	0	0	

Classification of Nutritional Status (by wt for age)						
	Boys			Girls		
	Below 1yrs	1-3yrs	3-5yrs	Below 1yrs	1-3yrs	3-5yrs
(1)	(2)			(3)		
No. of Children Weighed	927	2165	2029	1017	2249	1907
No. of Children with Normal Weight	418	760	875	416	774	873
Grade I	379	951	875	343	868	873
Grade II	132	429	341	149	364	350
Grade III	3	24	21	10	30	22
Grade IV	0	1	7	99	213	2
No. of Children Weighed	64	79	139	138	243	112
No. of Children with Normal Weight	42	50	101	105	127	90
Grade I	17	16	29	28	67	10
Grade II	5	13	3	5	49	3
Grade III	0	0	0	0	0	0
Grade IV	0	0	0	0	0	0
No. of Children Weighed	203	196	420	374	537	541
No. of Children with Normal Weight	140	124	237	208	300	335
Grade I	50	59	150	138	152	142
Grade II	13	10	37	23	76	61
Grade III	0	12	0	0	0	2
Grade IV	0	0	0	0	0	0
No. of Children Weighed	356	285	494	522	1154	1363
No. of Children with Normal Weight	211	163	290	283	682	741
Grade I	145	122	166	175	390	185
Grade II	0	0	37	63	78	2
Grade III	0	0	1	1	2	0
Grade IV	0	0	0	0	0	0
No. of Children Weighed	221	229	667	736	679	664
No. of Children with Normal Weight	141	145	281	371	278	215
Grade I	138	40	267	298	269	285
Grade II	42	43	114	61	128	158
Grade III	2	1	5	6	4	6
Grade IV	0	0	0	0	0	0

Name of ICDS Project	Immunization Status											
	Pregnant		Children 0-1yr		Children 0-1yr				Children 1-3yrs		Children 3-	
(1)	(2)		(3)		(4)				(5)		(6)	
Khoribari Phansidewa	1st dose	2nd dose/ booster		1st dose		1st dose	2nd dose	3rd dose				
	112	200	BCG	215	DPT	320	273	184	DPT Booster	0	DPT	73
			Measles	156	Polio	326	264	173	Polio Booster	98	*2nd dose	20
Mirik	19	20	BCG	11	DPT	40	56	51	DPT Booster	34	DPT	3
			Measles	50	Polio	42	58	41	Polio Booster	30	*2nd dose	0
Kurseong	12	11	BCG	51	DPT	40	38	21	DPT Booster	24	DPT	14
			Measles	25	Polio	40	38	21	Polio Booster	24	*2nd dose	14
Kalimpong I	25	20	BCG	45	DPT	88	78	20	DPT Booster	90	DPT	42
			Measles	45	Polio	88	78	21	Polio Booster	42	*2nd dose	30
Darjeeling Pulbazar	21	23	BCG	31	DPT	21	18	25	DPT Booster	49	DPT	49
			Measles	29	Polio	21	18	25	Polio Booster	38	*2nd dose	32
Rangli Rangliot	56	74	BCG	20	DPT	75	60	36	DPT Booster	30	DPT	73
			Measles	59	Polio	75	60	36	Polio Booster	30	*2nd dose	20

*given to those children who could not be Immunized during 1-3years

Pre School Education

Name of ICDS Project	No. of AW's conducted Pre-School education in the month		Total Children (3-6yrs) enrolled in the Pre-School Registers in all reported AW's during the Month		Total No of children actually attended for 15 days or more	
	15-20days	21days+	Boys	Girls	Boys	Girls
Khoribari Phansidewa	9	169	3772	3819	2095	2083
Mirik	-	84	995	974	552	572
Kurseong	-	63	845	925	810	896
Kalimpong I	-	77	1440	1480	1340	1370
Darjeeling Pulbazar	-	140	3110	3116	1021	982
Rangli Rangliot	-	59	538	547	409	400
Siliguri Naxal	-	107	2272	2252	1356	1397
Jorebungalow Sukhiapokhri	1	87	117	118	887	888
Siliguri Municipality	-	99	1325	1422	711	777
Kalimpong II	-	41	736	720	664	649
Gorubathan	-	39	876	870	760	772

Source:ICDS, Memo No.64/ICDS-DJ/02/4/02

Tuberculosis (TB)

Tuberculsosis (TB), an ancient infectious disease, was known as the dreaded "white plague," "pthisis," or "consumption" in the English terminology of the last century and as "*Rajyaroga*" (king of diseases in India).

Fifty years after Independence it is still India's biggest public health problems, claiming an estimated 500,000 lives every year and causing disease in about 17 million. Affecting adults in the prime of their lives, it causes much suffering and economic, loss for patients, their families and the nations. It results in 26 per cent of preventable adult deaths and is one of the most important causes of death among women of childbearing age. What is tragic is that the disease is curable-(Thelma Narayan, The Hindu Survey of the Environment)

Tibetan resettlements in India also report a high prevalence of TB and Darjeeling has a large population of Tibetans although it has not been substantiated till date whether the aforesaid statement holds true.

Industrial and Urban growth are correlated with TB and it was "perhaps the first penalty that capitalistic society had to pay fo the ruthless exploitation of labour-which should be kept in mind with regard to Darjeeling because it one of the major plantation areas. India had a big problem of TB among the post Partition refugees in 1947. Disrupted social conditions, undernutrition, poor housing and physical and emotional stress are pre-disposing factors.

There are manuy factors that have led to TB being such a major health problem. Among them are: -

Housing:- TB primarily affects the lungs but can also spread within the body affecting several other organs. It is an air-borne disease, transmitted to others by coughing, spitting and talking. Other patinets whose phelgm or sputum contain bacteria (termed sputum positive) are sources of infection for other people.

The bacteria disperse through small droplets which survive for long periods in dark, unventilated conditions. Poor congested housing, a result and indicator of poverty in the hills, is an important wlement in disease transmission. The Darjeeling Municipality has identified 37 areas as slums in the Darjeeling hills. These include such areas with small tenements and houses with insufficient or no ventilation provide the right environment for the survival and spread of the organism.

Smoky chullas or cooking fires are shown by studies and experiecne in India to increase the risk of respiratoryu problems. Especially predominant in the rrural areass and the tea gardens, these could aggravate the disease and make the life of a TB patient more difficult and perhaps be a risk factor in the spread of TB. Similarly, patients with TB are advised not to smoke to prevent further lung damage. Promotion of smokeless chulas by development agencies could also be a part of the ant-TB package.

Urbanisationn: -

There were attempts in the Revised National TB Control Programmme (has not come to Darjeelint yet) in India in 1993 to give greater importance to urban areas in the programme. The urban population has increased over three decades from 20% to 26% in 1991 with some inter-state variations. In the District of Darjeeling it has increased from 396060 in 1991 to 1606900 in the year 2001 which means that there has been a growth by 75%. The National Sample Survey findings showed that TB is equally prevalent in urban and rural areas since about 80% of the population of the hills is rural, the problem is understood as being predominant in the rural areas and the tea gardens.

Like mentioned before, however, uncontrolled, unplanned growth in the urban areas of the hills has led to the profileration of slums which provide the right environment for the spread of the disease.

The National Tuberculosis Programme was the first health programme to emphasize the need to develop the health in rural areas with which TB services were to be itegrated. But in the hills, the programme is being hampered by the fact tht the supply of anti TB drugs by the state and central government is not sufficient. Provision for the local purchase of anti TB-drugs is considered necessary as the supplies from the state and central government are inadequate for which the requirement fundis Rs 20.00 lakhs. [Source: DMO]

There is a major urban-rural divide with regard ot differentials in health budgets and health care services. Women in rural areas are more vulnerable to the disease considering the fact the women in the hills are not only engaged in domestic labour but work with the men in the fields also. Also, in the face of firewood and water shortages, not only are women forced to change the food habits of their families, but tend to sacrifice their own nutritional intake in order to provide more for the finiliy, often missing meals altogether. Thus, during pregnancy when they should, in fact be, increasing their intake of calories, results in women becoming anaemic. Thus, excessive labour within and outside of the household compels women to limit their hours of rest to the minimum. All these factors make the women all the more susceptible to TB. This could explain the fact that women between the age group of 15-34 have a higher incidence of TB than men.

Incidence of TB is also very high in the tea gardens. This could be attributed to the fact that the working environment of the plantation workers is abysmal.

- The housing facilities were in direct violation of the Plantation Act. There are no toilets or sources of potable drinking water.
- No medical facilities are available to the workers.
- The smaller tea gardens rarely allow the workers the stipulated benefits for illness and other leave facilities. Such services as canteens, creches and recreational facilities remain on paper alone.
- As the work is based on piece-rate system, workers are compelled to work long hours.
- Without feetwear in the cold and wet climate, the workers often develop fissures on their feet that go untreated. Women often contract hookworm, which in turn causes prolonged anaemia that makes them more prone to Tuberculosis. But here it should be remembered that due to the nutrition pattern of the women, (women sacrifice for the family members in terms of food, and also the caseof the male child being given more preference in terms of nutrition, education etc.) where they mostly rely on the intake of carbohydrates, which means that most womena are anaemic.
- The incidence of TB is also said to be high among workers who spray chemicals on the gardens.

So, the need for awareness and therefore making the treatment of the disease community based is an utmost need of the hour, where the monitoring of drugs is done by the community. This will ensure that there are no drug defaulters and hence less relapse and drug resistant cases.

Reference: The Hindu Survey of the Environment '97
Tuberculosis: Persistent Killer Thelma Narayan page 71

National Tuberculosis Control Programme Yearly Report From January2001 to December 2001												
Retreatment cases & New cases PulmonaryTuberculosis										Area of No. DOT'S SCC		
Smear Positive				Smear Negative		Smear not done		Extra Pulmonary		Total		
New cases		Relapses										
(1)		(2)		(3)		(4)		(5)		(6)		
M	F	M	F	M	F	M	F	M	F	M	F	TOTAL
849	741	59	56	428	640	29	23	467	437	1832	1897	3729

The table 'Retreatment cases and New cases' shows that a total of 3,729 people were tested positive for TB which means that 0.2% of the total population was infected with TB within the time period of January to December 2001.

There is a higher incidence of TB among males –column 1-new cases and also the number of males are higher when it comes to relapse cases. But the total shows a higher number of Females by 3.4%.

Smear Positive New Cases																
0-14		15-24		25-34		35-44		45-54		55-64		65-		Total		
M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	TOTAL
85	92	109	146	117	140	120	119	124	123	138	99	102	76	795	795	1590

Smear Positive New cases: shows that the incidence of TB is among the Females between the age group 15-34, 17.9% of the Total (male and female) and 36% of the Female totals. This is a point to be noted considering the fact that the age-group between 15 to 34 is the reproductive age of women, who at that period of time are most vulnerable and are likely to get infected. They comprise 43.73% of the total population approximately. The incidence of TB in males is highest between the age group 55-64. The incidence of TB among children seems quite low. Children between the age group comprise 35.4% of the total population.

Treatment Result For New Smear Positive Cases Absolute Number Of NON DOT'S AREA							
Total Cases Registered	Total Cases Evaluated	Smear Positive at the end of the treatement cured	Complete treatement by smear at the end of treatment	Dead	Failure	Interrupted Treatement	Transferred out of District
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
-	5229	1266	1427	12	279	2189	56

Treatment Result For New Smear Positive Cases (Absolute Number of NON DOT's Area.)

The total number of cases evaluated in the period between January to December –2001 is 5229 out of which 1266 were cured which means 24.2% were cured. From the total cases evaluated 1427 patients were not cured which comes to 27.2%. The mortality rate for the year is 6.2% and the Failure rate comes to 5.3%. A total of 2189 patients treatment were interrupted which comes to 41.8% and 56 patient i.e. 1% were transferred out of the District.

Number of Tuberculosis Patients Detected by District Under National T.B. Control Programme (For the month of January 2001 to December 2001)

A total of 3823 patients (District T.B. Centre and Peripheral Health Institutions taken together) were treated in the time period between January 2001 to December 2001. Within this 35% were treated in the District T.B. Centre and 61% were treated in the P.H.I.'s.

The total Figure shows the highest number of cases/ tests for Sputum positive 1590 (41.5%) followed by sputum Negative 1305 (34.1%) followed by Extra Pulmonary 928 (24.2%.)

Number of Tuberculosis Patients Treated By Districts and Places Under National Tuberculosis Programme, West Bengal 2001(January 2001 to December 2001)									
District	District TB Centre			Peripheral Health Institutions			TOTAL No.		
Darjeeling	Number put on Treatment	Completed Treatement	Under Treatment at the end of the year	Number put on Treatment	Completed Treatement	Under Treatment at the end of the year	Number put on Treatment	Completed Treatement	Under Treatment at the end of the year
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	1050	444	3477	1183	1456	4919	2233	1900	8396

Number of T.B. Patients treated by District and Places under National T.B. Control Programme (January 2001 to December 2001.)

A total of 2233 patients were put under treatment out of which 1900 patients completed treatment. Compared to the District TB Centre the number of patients treated in PHIs is higher.

Number of X-Ray and Sputum Examination Done, District and Place of Examination Under District TB Control Programme West Bengal

District	District TB Centre				Peripheral Health Institution				Total			
	X-Ray		Sputum		X-Ray		Sputum		X-Ray		Sputum	
	Total No.	New	Total No.	New	Total No.	New	Total No.	New	Total No.	New	Total No.	New
Darjeeling	1932	1078	1620	931	1831	4231	5628	4855	9763	5300	7248	3786

In the District T.B. Centre the total number of X-Ray done is higher than that of the Peripheral Health Institutions by 5.2% whereas the number of sputum cases is higher in the Peripheral Health Institutions by 71.2%. A look at the totals shows the number of cases higher with regard to X-ray than Sputum by 25.7%.

Number of Sputum Positive Tuberculosis Patients Treated with Short Course Chemotherapy (SCC) by Districts and Places of Treatment Under District Tuberculosis Programme (January 2001 to December 2001)

District	Place of Treatment	Number put on SCC Treatement			Completing Treatment	Under Treatment at the end of the year
		Regimen A	Regimen B	Total No.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Darjeeling	D.T.C.	421	13	434	522	431
	P.H.I.s	449	7	1156	471	1013
	D.T.P.	1570	20	1590	993	1444

Assisttant Chief Medical Officer of Health (PH&FW). DTC.

NATIONAL TB CONTROL PROGRAMME, DIST.DARJEELING

Year	No. of Patients at the beginning of the		No. of TB Patients put on Treatement during		Total	No. of Completed		No. of Lost	No. of Dead	No. of TB patients at the end of the period	
	SR	SCCR	SR	SCCR		SR	SCCR			SR	SCCR
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1996	12604	2628	2320	1649	18601	3049	1991	1378	23	11286	774
1997	11286	774	2777	1234	16071	2302	1636	389	19	10835	840
1998	10855	840	1795	2000	15520	2488	1551	682	29	9713	1057
1999	9713	1057	1241	2546	14577	2803	2643	595	32	7264	1220
2000	264	1220	802	143	9429	563	442	724	-	7240	460

Darjeeling District Poopulation on 1996-1999—13,48,792

Darjeeling District Poopulation on 2000-2001—16,05,900; Female 7,79,566; Male—8,26 ,334

No. (3) Column Physical Performance, year wise details of identification, Treatment & Discharged from 1996-97 to 2000-2001 under 2)-(iv) Column (Synopsis of as following (v)-(ix) Colum Revised National (TB Control Programme Not yet introduced in Darjeeling

Assistant Chief Medical Officer of Health (PH&W) DTC Darjeeling				
NATIONAL TB CONTROL PROGRAMME DIST. DARJEELING				
Physical Performance			Identification of Smear Positive Cases	
Year	Target	Achievement	Target	Achievement
1996	268	2688	201	2013
1997	721	7211	183	1838
1998	582	5821	244	2441
1999	537	5372	288	2282
2000	348	3485	135	1153

Total Detected of New TB Cases			Break up of cases		
Year	Target	Achievement	Sputum Positive	Sputum Negative	Extra-Pulmonary
1196	396	3963	2013	1555	395
1997	400	4008	1838	1441	729
1998	384	3845	2441	1040	364
1999	375	3757	2282	1064	411
2000	310	3107	1153	1281	673

X-Ray Examination of New Cases (TB)			
Year	Total No.	New	Target
1196	13694	8495	849
1997	12072	9075	907
1998	19836	1180	118
1999	13820	9821	982
2000	8649	5284	528

Darjeeling Dist. Population on 1996-1999- 13,48,792

Darjeeling Dist. Population on 2000-2001-16,05,900; Female----7,79,566; Male----8,26,334

No.(3) Physical Performance, year wise details of identification, Treatment and Discharged from 1996-97 to 2000-2001 under NTCP in the following proforma (i), (ii)-a,b,c,--Already maintained submitted to Audit on 22/6/2001

(2)-(iv) column (Synopsis of as following (v)--(ix) Column--TB Control Programme Revised Nation Not Yet Introduced

statistical figures Source: office of the C.M.O.H., F.Darjeeling

Malaria

Malaria has plagued mankind for thousands of years and each year over one million people are killed by the disease-a death every 30 seconds. This disease has recently killed many people in the adjoining areas of Dooars affecting over 30 people from Siliguri sub-division

The main causes for the rampant spread of malaria especially in the rural plains of Darjeeling are Environmental disturbances, particularly loss of forests, population growth, poor healthcare infrastructure and the most dangerous malaria parasite-*Plasmodium falciparum*, developing drug resistance and vectors becoming insecticide proof. The ethnic diversity of the population also has an important bearing on the disease. For example, tribals, living in accessible areas record a very high incidence of the disease. They constitute 8% of the total malaria cases and over 60% of the total malaria cases and over 60% of -*Plasmodium falciparum* cases in the country. These figures were found to increase as forests, on which these minorities subsist, are becoming increasingly accessible to exploitation.

According to figures recording in July 2001, people from the Siliguri-Naxalbari areas are more affected by the disease than the people from the hills and Sukna division where the greenery is more or less maintained. The Siliguri-Naxalbari block account for the maximum number of -*Plasmodium falciparum* cases in the District.

Mosquitoes have a life span of 25 days in ideal conditions, but on an average it is not more than 10 days. They can migrate up to 12 km a day. And by this sheer ability to proliferate in millions, the ubiquitous mosquitoes have been terrorizing the society.

Some species can resist even powerful chemical insecticides. The vectors spreading malarial parasite had earned the dubious distinction of killing millions of people. Extensive anti-larval operations and use of mosquito nets and repellants cannot ward off all mosquitoes and check the disease. A chance biting by the mosquito, say while taking a stroll, will be enough to send a person to bed with fever. Malaria has found to be responsible for the low birth weight of children, particularly those born to prima parous mothers. The growth of the foetus towards the end of pregnancy, when the cells of the brain multiply rapidly, is affected. Doctors say that a single bout or rigour of malaria fever consumes 5,000 calories. This amount of energy is generated by consuming of 1.6 kg of rice, food of an average Indian roughly for two days.

The vectors of malaria developing resistance against commonly used insecticides have escalated the costs of insecticides and the refusal of the people to get their houses sprayed have compelled have aggravated the problem even more.

Anopheles Culicifacies, the major vector of malaria, has become resistant to D.D.T. and H.C.H. and sometimes to Malathion too. And in the absence of replacement the insecticide resistance has posed serious problems and it is evident that Biological controls should be implemented now.

When the National Malaria Eradication Programme was launched in 1953 it made spectacular progress till 1965 but by 1976 it was a total failure which was attributed to the following factors.

a) Shortage and untimely supply of materials including equipment & insecticides,
b) Shortage of manpower & staff,
c) Development of insecticidal (DDT, Malathion and BHC) resistance by vectors.

It is evident that unless the living conditions of the poor improve, and health education imparted, the control programmes to check epidemic like malaria will continue to be ineffective.

Reference: The Hindu Survey of the Environment 1993,
Malaria: Back to bio-control.
K.Raghunathan.
Page 95

BLOCK-WISE MONTHLY MALARIA POSITIVE AND BLOOD SLIDE COLLECTION REPORT IN THE DISTRICT OF DARJEELING FOR JULY, 2001

Name of the Block	Month	Active		Total Positive		Mass cont.		Total Positive		Passive		Total Positive		Total		Total Positive		Age-wise positive								Male	Female
																		Pv			Pf						
		BS coll.	BS exam	Pv	Pf	Pv	Pf	Pv	Pf	BS coll.	BS exam	Pv	Pf	BS coll.	BS exam	Pv	Pf	0-5	5-15	15+	0-5	5-15	15+	Total		
Siliguri-Naxalbari	J	130	130	0	0	0	0	0	0	276	276	5	1	406	406	5	1	0	2	3	1	0	0	6	3	3
	F	47	47	0	0	0	0	0	0	2061	2061	6	39	2108	2108	6	39	0	3	3	6	9	24	45	30	15
	M	112	112	0	0	0	0	0	0	571	571	4	1	683	683	4	1	0	0	4	0	0	1	5	4	1
	A	89	89	0	0	0	0	0	0	458	458	5	2	547	547	5	2	0	0	5	1	0	1	7	6	1
	M	56	56	0	0	0	0	0	0	366	366	0	1	422	422	0	1	0	0	0	1	0	1	1	1	0
	J	405	405	0	0	0	0	0	0	395	395	15	13	800	800	15	13	1	1	13	1	1	12	28	20	8
	J	272	272	0	0	0	0	0	0	1078	1078	5	64	1360	1360	5	64	0	0	5	12	17	35	69	40	29
	T	**1111**	**1111**	**0**	**0**	**0**	**0**	**0**	**0**	**5205**	**5205**	**40**	**121**	**6316**	**6316**	**40**	**121**	**1**	**6**	**33**	**20**	**27**	**74**	**161**	**104**	**57**
Phansidewa Kharibari Block	J	0	0	0	0	0	0	0	0	5	5	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0
	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M	108	108	0	0	0	0	0	0	14	14	0	0	122	122	0	0	0	0	0	0	0	0	0	0	0
	A	249	249	0	0	0	0	0	0	8	8	0	0	257	257	0	0	0	0	0	0	0	0	0	0	0
	M	379	379	0	0	0	0	0	0	23	23	0	0	402	402	0	0	0	0	0	0	0	0	0	0	0
	J	217	217	0	0	0	0	0	0	18	18	0	0	235	235	0	0	0	0	0	0	0	0	0	0	0
	J	1524	917	0	0	0	0	0	0	44	44	0	0	1568	1568	0	0	0	0	0	0	0	0	0	0	0
	T	**2477**	**1870**	**0**	**0**	**0**	**0**	**0**	**0**	**112**	**112**	**0**	**0**	**2589**	**2589**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Sukna Block	J	139	139	0	0	0	0	0	0	43	43	0	0	182	182	0	0	0	0	0	0	0	0	0	0	0
	F	81	81	0	0	0	0	0	0	28	28	0	0	109	109	0	0	0	0	0	0	0	0	0	0	0
	M	84	84	0	0	0	0	0	0	29	29	0	0	113	113	0	0	0	0	0	0	0	0	0	0	0
	A	81	81	0	0	0	0	0	0	27	27	0	0	108	108	0	0	0	0	0	0	0	0	0	0	0
	M	64	64	0	0	0	0	0	0	18	18	0	0	82	82	0	0	0	0	0	0	0	0	0	0	0
	J	74	74	0	0	0	0	0	0	28	28	0	0	102	102	0	0	0	0	0	0	0	0	0	0	0
	J	113	113	0	0	0	0	0	0	38	38	0	0	151	151	0	0	0	0	0	0	0	0	0	0	0

5 Years Malaria Incidence and Death for the Year of 1996 to July 2001, in the District of Darjeeling

District	Years	Pv	Pf	Total Positive	Death	RT done	Age group							
							Pv			Pf				
							0-5	5-15	15-above	0-5	5-15	15-above	M	F
Darjeeling	1996	111	127	238	Nil	Done	2	14	95	11	15	101	156	82
	1997	56	46	102	Nil	Done	0	3	53	2	5	39	74	28
	1998	28	58	86	Nil	Done	0	4	24	4	9	45	63	23
	1999	73	115	188	Nil	Done	7	6	60	2	23	90	138	52
	2000	88	98	186	Nil	Done	3	15	70	8	17	73	130	56
	July 2001	43	136	179	Nil	Done	0	13	20	7	35	94	94	85

Block- wise Monthly Malaria Positive and Blood Slide Collection Report in the District of Darjeeling for July, 2001.

Silliguri Naxalbari: there are 40 Pv Total Positive cases out of which 2.5% belongs to the age group 0-5, 15% belongs to the age group 5-15, and 82.5% belongs to the age group 15 and above.

There are 121 Pf Total Positive cases out of which 16.5% belongs to the age group 0-5, 22.3% in the age group 5-15, and 61.1% in the age group 15 and above.

The total Pv and Pf positive cases are 161 and 20.4% cases are Pv cases and 61.1% are Pf cases. And within the total of 161 Pv and Pf cases 64.5% affected are male and 35% affected are female which means that the incidence of malaria is higher among males.

5 years Malaria Parasiste Incidence and Death for the year 1996 to July 2001, in the District of Darjeeling.

The incidence of malaria is seen highest in the year 1996. From the year 1996 to 1998 there has been a decrease in the incidence of Malaria by 63.8%. But from the year 1998-1999 a rise in the in the incidence of malaria is seen by 54.2%. And again from the year 1999-to July 2001 there has been a decrease by 4.7%.

1996: the total positive case are 238 in number out of which 65.5% affected are males and 35.5% are females. And the incidence of malaria in the age group between:
0-5 is 5.5%
5-15 is 12.2%
15 above is 82.3%
The Pv cases among the age groups is as follows:-
0-5 is 1.8%
5-15 is 12.6%
15 above is 85.5%
and the Pf cases among the age groups is:-
0-5 is 8.6%
5-15 is 11.8%
15 above is 79.5%

Among a total of 238 cases 46.6% is Pv cases and 53.4% is Pf cases.

1998: there are a total of 86 positive cases out of which 73.2% affected are males and 26.8% are females.
Incidence of Malaria in the age groups
0-5 is 4.6%
5-15 is 15.2%
15 above is 80.2%
Pv cases among the age groups is
0-5 is nil
5-15 is 14.2%
15 above is 85.8%
And Pf cases among the age groups is
0-5 is 6.8%
5-15 is 15.5%
15 above is 77.7%

Among a total of 86 positive cases 32.5% is Pv cases and 67.5% if Pf cases.

2000: there are a total of 186 out of which 69.8% affected are males and 30.2% affected are females.
Incidence of Malaria in the age groups
0-5 is 5.9%
5-15 is 17.2%
15 above is 76.9%
Pv cases among the age groups is
0-5 is 3.5%
5-15 is 17.4%

15 above is 74.4%

Among a total of 186 positive cases 47.3% is Pv cases and 52.7% is Pf cases.

Kala Azar

Kala Azar is a disease that has disappeared from the South and is now confined to the East. It shot into prominence when it emerged as a major killer disease in the late 1970's after a lull in the previous decade. In 1991 the disease was back in the news again accounting for several hundred deaths. Although the figures revealed that the people affected by the disease are decreasing in number since 1999, once cannot predict anything because it has a cyclical pattern.

Kala-azar belongs to the group of diseases collectively known as *Leishmaniasis*, caused by different species of Leishmania, a protozoan parasite. Out of 20 known species of Leishmania, at least 12 are known to cause various forms of leishmaniasis. Kala azar is caused by the parasite *Leishmania donovani*. Kala azar (visceral leishmaniasia) is a systemic disease, which affects liver and spleen (which can grow to an enormous size occupying almost the entire abdomen). The number of blood cells too decreases, as the bone marrow gets infected. Kala azar can kill the affected person if left untreated. Even with treatment, fatality rates range from five to ten per cent. This disease is mainly transmitted by sandflies *Phlebotomus argentipes*. If one considers the mode of transmission of the disease and its pathogenesis it is amazing that so many individuals can be infected and develop this disease.

The number of parasites the sandflies can pick up to transmit is very small because the parasite prefers to live in a special group of cells called macrophages and the number of macrophages in the blood is very small. Again, not everyone is bitten by an infected sandfly develops the disease, since many living in the affected areas are immune to the disease. Yet, several thousands of people are affected in each epidemic and the disease keeps coming back.

When the number of cases increased rapidly with each epidemic, the authorities stepped up efforts to detect cases early and treat them effectively. Such an intensive campaign usually yielded rich dividends-a rapid decline in the number of cases and deaths. Invariably the success led to complacency and slackening of control measures allowing the disease to reemerge.

Unlike mosquitoes, which breed almost everywhere, sandflies have specific climate and soil and food requirements. They generally thrive in areas with alluvial soil, which has plenty of saprophytic organic substances, and luckily for them, human habitats in the plains of Darjeeling District favour their breeding and thus help transmitting the disease. The villager's habit of keeping their cows and buffaloes in close proximity often sharing the same room is a familiar sight in the rural areas. Unplastered walls of houses, found in trural areas, provides the insect with many crevices, which serve as excellent breeding sites.

Another important factor that contributes to these epidemics is the large-scale migration of workers coming across the border –Nepal and Bangladesh. Such migrations usually bring into the epidemic area a large number of immunologically 'naïve' individuals who are easy targets for the people.

These are problems that hamper control of this dreaded disease. The infected person remains asymptomatic, have no outward signs of the disease and are almost impossible to detect, as there are no sensitive and specific tests to identify them. Diagnosis of this disease now relies on the presence of the parasite in the bone marrow of the patients.

There is another risk posed by the existence of asymptomatic patients. Immuno-suppressive conditions such as HIV (AIDS) infection greatly increase the risk of such patients developing kala-azar.

There is a clinical form of the infection, post kala azar dermal leishmaniasis (PKDL) which is usually seen in individuals who have received treatment and recovered from the disease. The infection is characterised by the appearance of skin lesions which are similar to that of leprosy. Since this condition is not recognised and treated promptly, the health workers believe that these patients serve as reservoirs for the disease as many patients harbour parasites in the skin lesions. They are active especially during the intervals between epidemics when the disease control measures have slackened.

The number of cases reported is usually a gross underestimate, based on attendance recorded at government health clinics. Many patients, even the private practitioners and these numbers hardly find their way to official records. This is one of the important reasons why an epidemic is not recognised early enough. Perhaps, the most important barrier in controlling the disease is the lack of awareness among the public.

Until health education is imparted and good health care is available along with an increase in the standard of living, kala azar may continue to be a regular, but an unwelcome visitor.

Reference:The Hindu Survey of the Environment 1993,
Kala-azar : Scourge of East India,
Dr. V. Kumaraswami,
Page 94.

5-Years Village-Wise Kala Azar Report of Phansidewa-Kharibari Block in the District of Darjeeling

Year	Name of Place	Case detected	Total
1996	1. Kamala T.E.	26	72
	2. Bijlimoni T.E.	12	
	3. Saidabad T.E.	16	
	4. Sona Chandi T.E.	5	
	5. Thanijhora T.E.	8	
	6. Dhananjoy	4	
	7. Shyambandhan	1	
1997	1. Thanijhora T.E.	3	9
	2. Telenga Jote	6	
1998	1. Bijlimoni	2	28
	2. Ambari	1	
	3. Kamala T.E.	1	
	4. Bhimbar	13	
	5. Paharghumia	5	
	6. Bhogvita	4	
	7. Chekarmari	2	
1999	1.Bihlimoni	13	53
	2. Dhamal Jote	6	
	3. Saidabad	13	
	4. Balai Jote	4	
	5. Kharibari	6	
	6. Tetliguri	6	
	7. Kamala T.E.	5	
2000	1. Charna Jote	1	28
	2. Saidabad	5	
	3. Bidhan Nagar	10	
	4. Bhimbar	9	
	5. Kamala Vita	3	
2001	1. Bidhan Nagar	5	17
	2. Dangar Vita	3	
	3. Kharibari	5	
	4. Saidabad	4	

Source: Department of Health & Family Welfare, Office of the Dy. Chief MedicalOfficer of Health-II, Siliguri, Darjeeling

The highest number of cases detected has been in the year 1996. The lowest being in the following year 1997 with a total of 9 cases registered. There has been a sudden rise in the number of Kala azar cases detected in the year 1999 and from 1999 onwards we see a downward trend again.

5 Years Village-Wise Kala-Azar Report of Siliguri-Naxalbari In the Block in the District of Darjeeling			
Year	Name of Place	Case Detected	Total
1996	Nil	Nil	Nil
1997	Nil	Nil	Nil
1998	1. Chandmoni T.E.	01	01
1999	1. Jamidarguri	11	11
2000	1. Jamidarguri	10	30
	2. School Dangi	03	
	3. Rathkhola	02	
	4. Ramdhan Jote	15	
2001	1. Naxalbari	03	05

Source: Department of Health & Family Welfare, Office of the Dy. Chief MedicalOfficer of Health-II, Siliguri, Darjeeling

Here we see a rise in the number of cases detected from 1998 to 2000 onwards. The year 2000 records the highest number of cases registered and then we see a sudden decrease in the year 2001.

HIV/AIDS

The statistical/secondary data for HIV/AIDS is not available and so far no research or documentation has been done or has not been made available to the public. Excluding the Siliguri sub-division there are no red-light areas in the hilly sub-divisions. But with tourism Darjeeling has seen a rapid increase in prostitution, with a floating sex-worker population. The floating sex-worker population is difficult to identify and also to reach. This group cuts boundaries of class but most are from the lower class. Authentic data is not available of the group. Apart from this the risk of intravenous use of drugs by drug addicts is posing as a major threat for the spread of the disease. Siliguri is the only outlet in India for the Golden Triangle Drugs bound for the international market and some of the drugs filter to the Darjeeling Hills from Siliguri

According to Major Malla, Secretary, Darjeeling Red Cross Society/D.A.C.C. there are around 40 known cases of HIV/AIDS in the Darjeeling District. He says that the threat of spread of HIV/AIDS in the hills is mainly from the people who work in the plains-such as people in the army, drivers, waiters, beauty saloon workers and security guards etc. There are a lot of migrant workers in the District.

In the hills there is an immense need for an awareness campaign. Awareness level on HIV/AIDS is very limited in the Darjeeling and of that work that has been undertaken in terms of awareness has not been sustained and limited to urban areas. It has yet to reach the rural inaccessible communities, who are also a very high-risk zone as most of the migrant workers described above are from the rural areas. There is also a need of a monitoring body/agency. So until and unless this is done with immediate effect, the risk of HIV/AIDS reaching to epidemic proportions in Darjeeling is imminent.

Drug and Alcohol Abuse

The first wave of drug abuse hit the hills in the early 1980's and today it is even more rampant especially among the youth between the age group 20-29 years old but these days addiction and substance abuse is hitting the young at a much lower rate than what it was before. Alcohol, which is rooted in every society or the culture of people, has now turned into a menace in its own way affecting a large population of the hills.

Many factors can be attributed for augmenting this deadly menace and some of them are:

- Lack of preventive measures; awareness campaigns, curbing the availability of the substance and banning any such trade and reaching to the people at the grass root level. This will not lonely ease the pressure on the curative

measures but also help the recovered addicts who are actually referred to as patients by 'Kripa' to come back and live a normal life instead of being stigmatised and labelled as criminals or otherwise;

- Dysfunctional families; i.e. families where alcoholism, drug abuse, divorce and or other negative forces are present which aggravates or is likely to induce alcoholism or drug abuse in the younger generation or any other person in the family;
- The existing Value System within the society; where there is enormous pressure of expectations on the younger generation from the parents and elders side which is a result of fierce competition. This leads to frustration among the young when they cannot live up to the expectations of the parents and guardians;
- Unemployment which leads to idleness and hence frustrations among the youth considering the fact that the scope of better education and job opportunities is very limited in the hills;
- Negative influence of media and Peer Pressure, where using drugs or addictive substances or alcohol is made a fashion statement;
- Absence or need of more rehabilitation and counselling centres which will facilitate curing and hence facilitate the cured people within the mainstream society by prompting them to take up studies or any form of work work;
- The issue as such needs to be made community based with awareness within the community and where the people themselves monitor and initiate actions to mitigate or lessen the problem;
- The standards of education should be improved or in other words educational institutions should incorporate awareness lessons into their syllabi. And not only that, the present education system as such does not prepare the young for the outside world;

The problem of drug and alcohol abuse results in consequences that one day could reach epidemic proportions. As of now the crime rate in the hills has gone up where the addicts steal and loot or even commit murder to support their habit. Diseases likeHIV/AIDS, Tuberculosis, Hepatitis and other communicable disease have risen because of intravenous drug use. Many families are broken up and the number of dysfunctional families are on the rise. Hence looking at the present situation the future seems bleak because the very generation that will one day will be leading the society and the country seems to be headed towards destruction.

KRIPA COUNSELLING AND REHABILTIATION CENTRE (FOR DRUG AND ALCOHOL ABUSE)

GENERAL INFORMATION AND BACKGROUND:

Kripa (Sanskrit word meaning GRACE) is a Non-profit Organisation, which enables at aiding in the arrest of Alcohol and Drug abuse in the hills of Darjeeling District and it's neighbouring areas, like Sikkim, Bhutan and Nepal since 1992. This organisation was setup on the initiative of a group of concerned citizens who realized the extent of the damage caused due to alcohol and drug abuse among the populace, especially among the youth. On the request from the members of the Darjeeling Kripa foundation, expertise, training and funds were assisted by the Kripa Foundation Mumbai.

The present Counselling and Rehabilitation facility located at Mall Villa 1, C.R.Das Road was sanctioned by the District Magistrate of Darjeeling on the request of the Core Committee. In the year 1994, Fr. E.P.Burns, S.J., the Director of Hayden Hall Social Centre, Darjeeling also a member of the Core Committee, released one of the rooms of Hayden Hall Institution Kripa Centre to be used as a separate Counselling component from the residential facility. It is still being used for that purpose till today.

Kripa does not receive any government support for the program. Even though the financial resources of the residential clients are limited, the centre still charges them a certain amount of money for their meals, while the treatment is free of cost. There are also some clients in the facility who cannot pay their full amounts. The collection from the clients covers about half of the overall budget. The rest is made up by local donations and occasional subsidy from Kripa Trust Fund, Mumbai. Hence, the financial situation of Kripa Darjeeling is very screechy.

Description of Teatment Program

Kripa Darjeeling accomodates 30 to 35 residential clients, though the resident capacity is hardly sufficient for 20 people. The treatment program is five to six months long. The mode of treatment is a holistic approach of healing using eastern and western disciplines, transpersonal and transformational technology, the corner stone being the 12 Steps of Alcoholic Anonymous with a goal of total abstinence not only from Alcohol or Drugs, but also from their impulsive and compulsive behaviour and an improvement on the Bio, Psycho, Social and Spiritual levels.

The general feeling is that Kripa is running a good treatment program as people are recovering. Over the past nine years, Kripa has reached out to 336 plus afflicted people and has successfully brough healing and restoration to more than 57% who are enjoying the fruit of Recovery. The broken families have been re-united, the parents have become parents, and many dropout students are again continuing their studies and employees who were suspended from jobs are back to work with dignity.

At the counselling centre in Hayden Hall, motivation, counselling and screening of prospective clients for treatment are done, and also Therapy Meetings for the family members of the clients and regular self-help groups meetings for the ex-clients are conducted here. Apart from these functions as part of the preventive measures, the Counselling Centre organizes awareness and outreach programmes.

Thus far, Kripa Darjeeling has conducted a number of seminars for drug/alcohol abuse and HIV/AIDS. awareness programmes in various villages, Tea Gardens, Public Offices, Social and Religious Institutions as well as educational Institutions in Sadar Darjeeling, Kurseong, Kalimpong, Siliguri and Sikkim. The Centre also covers medical and law enforcement agencies with these programmes. Apart from these, Kripa Darjeeling has successfully organized nine walkathons, having more than 3,000 people taking part in each rallies.

Kripa's present aim now is to move into community-based programmes reaching out to people at the grass-root level, but this would at the same time depend on the availability of funds to carry out the projects. Due to limited budget and financial constraints, the centre is still unable to reach out to the majority of the masses of the hills, and a vast number of people are still ignorant of the problems and dangers of addiction.

PERFORMANCE OVER THE YEARS, 1992-2001							
Year	New	Old	Total	Exit	Discharge	Transfer	Continuing
1992	24	-	24	7	3	2	12
1993	39	12	51	15	16	17	3
1994	33	3	36	5	18	3	10
1995	38	10	48	5	23	4	16
1996	40	16	56	8	26	5	17
1997	32	17	49	5	27	1	16
1998	50	16	66	11	37	2	16
1999	55	16	71	6	37	7	21
2000	62	21	83	6	48	1	28
2001	76	28	104	7	72	-	25
TOTAL	449	-	-	68	307	42	-

Source: Kripa Darjeeling

The above figures are the figures that show the number of patients that have been admitted, cured and discharged over the years from Kripa Darjeeling. As pointed earlier Kripa Darjeeling accomodates from 30 to 35 residential candidates, which is by the way, actually has a capacity of only 30 to 35 patients. When we look at the second column we see that over the years since the inception of Kripa Darjeeling from 1992 there has been a more or less a steady climb in the number of patients of admitted to the facility except for the years 1993, 1997 and the year 2000. The highest number of new patients have been in the year 2001 (76 patients).

The Total number of patients who left the facilities, or ran away are 68 in number are indicated in the column 'Exit'-which totals 15% from the year 1992- 2001. The Total number who were discharged from the facility after having completed the course are 307 in number which constitutes 68% which in other words signify the total people who completed the course and hence left the facility but the number of people who have defaulted or relapsed should not be taken into account from this figure only. And the patients who were transferred to other facilities constitute 9% in total that is from 1992 to 2001 the rest 8% includes patients who are continuing the course or in other words who have not completed the course.

PERFORMANCE OVER THE NINE YEARS				
Total admission from April 1992 to March 2001=336 (Three hundred thirty six)				
Calssification by Age group	Drug Addicts	Alcoholics	Total	Percentage
15 to 19 yrs	37	17	54	16%
20 to 29 yrs	131	29	160	48%
30 and above	79	43	122	36%
TOTAL	247	89	336	100%

Source: Kripa Darjeeling

The above figures (Performance Over The Nine Years) of Kripa Darjeeling indicates the performance rate of Kripa from April 1992 to March 2001. It can be observed that the age group from 15 to 19 years old are mostly Drug Addicts, which is 37 in number which means 68.5% are Drug addicts and 31.5% (17in number) are Alcoholics in this age group. In Total this age group consists of 16% of the total addicts.

For the age group between 20 to 29 years also the same trend as that of the age group stated earlier can be said to be true. The number of Drug addicts are 131 in number which would mean that they comprise 81.8% (131 in number)

of the Total Patients/addicts in the age group 20-29years. And in the same age group the total number of alcoholics are 18.2% (29 in number).

For the age group 30 and above the number of Drug addicts are 79 in number 64.7% and the number of Alcoholics are 43 in number, 35..3%.

So it can be concluded that the number of Drug Addicts are higher in number. They comprise 48% of the 73.5% of the total addicts and the Alcoholics constitute 26.5% of the total addicts.

And besides, it is seen that the hardest hit age group in terms of both Alcohol and Drug abuse lie between the age group 20 to 29 years (48%) followed by the age group 30 and above 36% which is then followed by the lowest segment of age group 15 to 29 years 36%.

The row 'Clean' in the table 'PERFORMANCE' means or indicates the number of addicts/patients who after having completed the rehabilitation course have not defaulted/relapsed or in other words have not reverted to their habit of using drugs or alcohol. Which also in other words indicates the success rate of Kripa, which comes to around 57%. The percentage of people who have reverted to their previous habit are 86 in number which is 26%. The number of patients who have not been kept track of by Kripa (Unknown) constitute 12 %and they could either be clean or could have relapsed and 5% of the have patients who have died, they could have died a natural death or the habit could have taken their lives. But most of them are said to have died natural deaths.

PERFORMANCE		
EVENTS	PERFORMANCE	PERCENTAGE
Clean	190	57%
Relapsed	86	26%
Unknown	42	12%
Died (RIP)	18	5%
TOTAL	336	100%

Source: Kripa Darjeeling

Conclusion:-

Although the figures indicate or at least gives us a picture of the extent of the spread of drug and alcohol abuse among the various age groups, there are various things that one should keep in mind. First of all we have to consider the number of patients Kripa Darjeeling can accommodate, which comes to a maximum of 35 patients/addicts at a time. So this would mean that the actual number of addicts who are still at large have not been included in the figures. The percentages indicated in the above figures hardly comprise a sizeable percentage of the total drug users in the district. And the main factor is that the facility is solely meant for males only and so the incidence of alcohol or drug abuse among the girls have been missed out entirely considering the fact that no such facility exists for girls. The awareness level among the populace cannot be judged by the above figures alone and Mr. Sudeep Diksit, Counsellor Kripa, says that the social stigma is still there. And of course some people, that is people from the lower middle class or the poor can hardly afford to undergo the rehabilitation course under Kripa. But unlike the 70's or 80's the people are more or less aware and upto a certain extent are prepared or have anticipated the problem.

The incidence of HIV/AIDS and TB and other diseases spread by substance abuse or intravenous drug abuse could not be taken into account since there is no data available due to lack of any such body or organisation to do so. So there is an urgent need for the preventive measures to be taken by the community and the authorities involved including the administration. And also there is a need for conducting a proper study or research in order to form a basis or background to monitor the levels of drug and alcohol abuse among the populace and to take any such measures or action e.g awareness drives to control the spread of this menace and the package that it carries with it like HIV/AIDS, TB, Hepatitis and so on.

So the need for taking preventive measures is urgently needed before the problem reaches epidemic proportions.

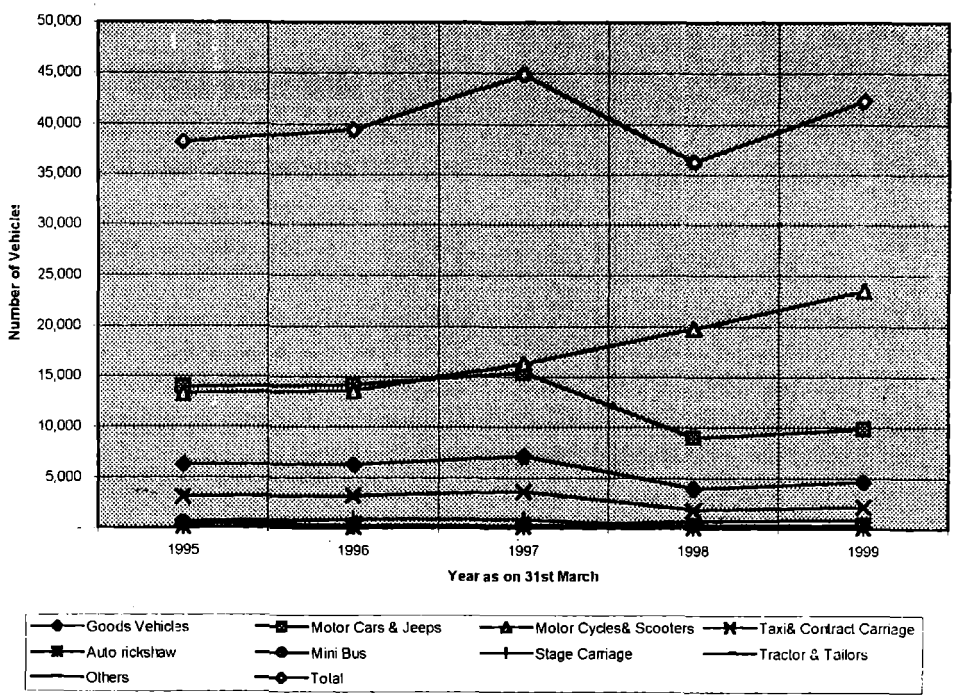
Vehicular Pollution and Accidents on Roads

Number of Registered Motor Vehicles in the District of					
Year (as on 31st March)	Goods Vehicles	Motor Cars & Jeeps	Motor Cycles& Scooters	Taxi& Contract Carriage	Auto rickshaw
(1)	(2)	(3)	(4)	(5)	(6)
1995	6,283	13,957	13,297	3,110	155
1996	6,318	14,183	13,592	3,255	155
1997	7,153	15,383	16,327	3,640	198
1998	4,013	8,999	19,762	1,835	118
1999	4,660	9,908	23,527	2,177	131

Year (as on 31st March)	Mini Bus	Stage Carriage	Tractor & Tailors	Others	Total
(1)	(7)	(8)	(9)	(10)	(11)
1995	560	398	680	31	38,171
1996	270	900	900	52	39,415
1997	329	930	930	180	44,882
1998	305	150	150	743	36,270
1999	382	192	192	910	42,330

Sources: 1) Home (Transport) Dept. W.B.
2) R.T.A. Darjeeling

Number of Registered Motor Vehicles in the District of Darjeeling



From the above table, it is seen that the total number of vehicles was highest in the year 1995, and then we see a decline in the number of Vehicles Registered form the year 1998 onward. But once again we see that the number is rising from the year 1999 onwards. But when we look at the 'other vehicles' we see that the number is increasing steadily between the years 1995 to 1999 onwards. When we look at the 'total' figures we see that the number of vehicles is on the rise again.

In Darjeeling, this fact can be easily viewed when one takes look at the traffic that is prevalent these days and any local resident will agree to the fact. So without proper pollution control agencies to check the pollution, the vehicular

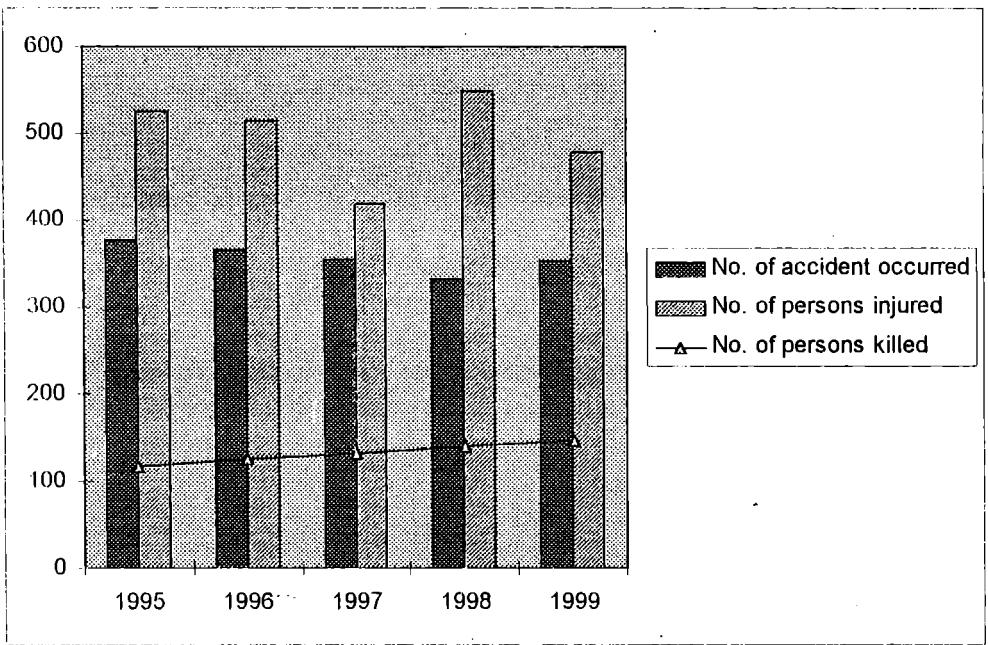
pollution in the Darjeeling Hill Areas especially in the urban centres are on the rise. And according to the 'Reproductive and Child Health Project for Darjeeling Municipal Town, April 1998,' around 20.3% of the population suffer from Arterial Respiratory Infection.

The registration in the number of vehicles is on the rise mainly because of tourism. Now we see that the number of tourist taxis is on the rise and it is said that these days a fourth 'T' i.e. Taxi has been added to the three T's of Darjeeling.

Accident on the roads in the district of Darjeeling

Year	No. of accident	No. of persons injured	No. of persons killed
(1)	(2)	(3)	(4)
1995	376	525	116
1996	365	515	125
1997	355	419	132
1998	332	549	141
1999	354	478	147

Source: Superintendent of Darjeeling

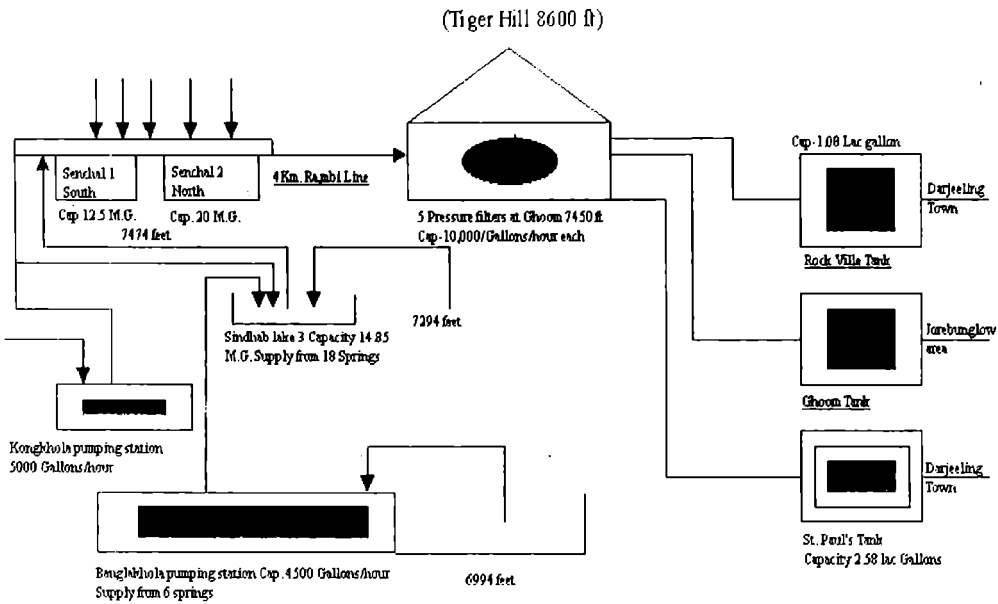


Water Crisis in Darjeeling

Source: 32nd Darjeeling Public Hearing
LEAD PAPER
D.S.RASAILY,
Darjeeling Citizens' Welfare Association,
Darjeeling

In the *Senchal* Wildlife Sanctuary, about 10 kms South East of Darjeeling town, there are two man-made lakes. The *North Lake* with a capacity of about 90 million litres built in 1910 and the *South Lake* with about 60.75 million litres in 1932. They are the major sources of water supply to Darjeeling municipal area. In 1981, the Public Health Engineering Department built the *Sindhao Lake* with about 65.25 million litre capacity to store the excess rainwater. However, when filled to capacity, it leaked heavily threatening a major disaster. Even after repairs, it is not able to hold water more than half its capacity. It needs further repairs.

Darjeeling Water Supply Scheme



Comparison in conduit flow in peak season (In Gallons/hour)			Comparison in conduit flow in lean season (In Gallons/hour)		
July	1984	1994	March	1984	1997
1.	75,000	82,000	1.	18,000	17,000
2.	65,000	90,000	2.	17,000	17,000
3.	74,000	89,000	3.	17,000	17,000
4.	84,000	84,000	4.	17,000	17,000
5.	72,000	78,000	5.	16,000	17,000
6.	74,000	82,000	6.	16,000	17,000
7.	74,000	82,000	7.	16,000	16,000
8.	74,000	90,000	8.	16,000	15,000
9.	56,000	90,000	9.	16,000	15,000
10.	60,000	82,000	10.	16,000	15,000
11.	60,000	80,000	11.	16,000	14,000
12.	65,000	80,000	12.	16,000	14,000
13.	65,000	80,000	13.	16,000	14,000
14.	55,000	80,000	14.	15,000	14,000
15.	55,000	79,000	15.	15,000	13,000
16.	55,000	70,000	16.	15,000	15,000
17.	55,000	72,000	17.	15,000	15,000
18.	50,000	71,000	18.	15,000	13,000
19.	48,000	74,000	19.	12,000	12,000

20.	50,000	82,000	20.	15,000	14,000
21	55,000	74,000	21.	15,000	15,000
22.	52,000	82,000	22.	15,000	12,000
23.	50,000	Nil	23.	15,000	12,000
24.	58,000	Nil	24.	15,000	11,000
25.	56,000	Nil	25.	15,000	10,000
26.	59,000	Nil	26.	15,000	10,000
27.	55,000	Nil	27.	16,000	14,000
28.	53,000	Nil	28.	15,000	16,000
29.	55,000	40,000	29.	15,000	14,000
30.	58,000	94,000	30.	15,000	14,000
31.	54,000	92,000	31.	16,000	14,000
Total	**1,871,000**	**1,999,000**		**482,000**	**443,000**

Source: Semchel Wildlife Sanctuary: The Life Line of Darjeeling,, Umesh Dwivedoi, Himalayan Paryavaran, Darjeeling: Vol.5

Earlier, there were 30 natural springs, but now reduced to 24, in the catchment area. They feed the lakes through masonry conduits and the water is pumped up to the town from *Jorebungalow* filter house, which is at a distance of 2.5kms from the lakes. *Rambhi jhora* and *Bangla Khola* are some of the perennial hill streams, which feed the lakes.

The total quantum of water from all these sources gives a discharge of about 54,000 litres per hour around early March. After a few showers, it increases to about 1,12,500 litres per hour. Taking this maximum discharge during the lean season, the total inflow in to the lakes is around 2.7million litres per day against an estimated requirement of about 5.4 million litres (as per the Agric-Finance Corporation's Survey Report 1984). Another report, possibly of the Darjeeling Municipality, revealed that not less than 6,75,000 litres of water is lost everyday due to leakage in the 9 k.m. long feeder line from Senchal lakes to the town. Thus, the total availability of water is only 20.25 million litres per day for a total population of 1,03,000 during the lean season. If by preparing the main feeder line, transmission losses can be reduced then the deficit will be limited to 2.7 million litres per day. Keeping this aspect in view, the following measures must be taken to meet the present deficit and the anticipated demand of water.

1. Vegetative cover of the catchment area comprising 6 Blocks in *Senchal* Wildlife Sanctuary must be restored on priority bases;
2. The main objective of the integrated development project for preservation of *Senchal* ecosystem, prepared by the Agri-Finance Corporation in 1984, is to augment the water sources in *Senchal* area. It envisaged a total capital outlay of Rs.25.51 million with short-term credit component of Rs.4.343million and government grant/subsidy of Rs.21.235 million phased over a period of 5 years. This project mus be implemented;
3. The *Rambhi Jhora* Project, prepared by the Public Health Engineering Department, was abandoned after initial progress on the grounds that 6,75,000 litres per day by 2-stage pumping is not economically viable. The local people are of the view that more than 6,75,000 litres can be harvested everyday. It must be reviewed;
4. Main feeder line must be repaired to stop leakage;
5. Partially modify the town's distribution lines to ensure fair and equitable distribution of water;

Balasan Water Supply Project, prepared by the Public Health Engineering Department and estimated to cost about Rs.3.3 billion, was cleared by the Government in 1996. It must be implemented as it will solve the water problem of the town on a long-term basis;

SITUATION IN KALIMPONG

The problem of potable water in *Kalimpong* is appalling. The *Neora Valley* Water Supply Project, taken up as a long term solution, is still incomplete. Partial relief has been given by drawing water from *Dhaula Khola.* Unless this project is completed, the crisis will continue to loom large on this town.

SITUATION IN KURSEONG

Kurseong town has not faced water crisis so far though some scarcity is faced. However, the ever increasing population demands advance planning before the situation goes out of hand. The authorities, without waiting for a crisis to erupt, should act now.

MIRIK LAKE

Mirik was a small village till the artificial lake was constructed there in 1979. Thereafter, it became a place of tourist attraction and construction boom started. In the late 1980s, the place was declared a Notified Area. The lake receives water from several springs in its catchment area and is the main source of potable water supply to *Krishnagar* and *Mirik.* Water is filtered in the Filter House in one corner of the lake and is then pumped into town for supply. But with unabated building construction in its vicinity and the catchment area, all sewerage and garbage started finding its way into the lake. Earlier, its maximum depth was 26ft. Now, it is considerably reduced. It is heavily polluted and with

the accumulation of garvage and sullage, it is now practically a dead waterbody unable to sustain anuy life. Urgent and drastic measures are neccessary to save it. The following measure are suggested for immediate adoption:

1. Human faecal pollution should be stopped by ensuring construction of public toilets and effective septic tanks in residential buildings;
2. A network of sewage system should be developed for *Mirik* and *Krishnagar;*
3. A 3-layer plantation of herbs, shrubs and trees should be started in the lake's catchment area;
4. Grazing in the catchment area should be prohibited;
5. Bathing and washing in the lake should be prohibited; and
6. The excess organic matter should be removed from the bottom of the lake under expert guidance.

N.B. it should be noted that water is not just an urban problem, where one sees a long line of people waiting for their turn to collect water or water vehicles distributing water in parts of the town. The people in the rural areas equally face the problem, since most of the people in these areas rely on spring water for their daily use. Some even have to walk long distaces to carry water. The availability of water in the rural area is diminishing due to deforestation and increase in popultion. This water is not considered safe for drinking, especially during the monsoons. The water in these areas is not monitored by anybody and most people are not aware about the health hazards involved. Most of the time the focus is kept on the urban areas and the rural areas are overlooked when it comes to the water problem but this needs to be changed if the well being of the people is to be looked into.

Civic Sanitation in Darjeeling

Source: 32nd Darjeeling Public Hearing
LEAD PAPER
K.P.MALLA,
Federation Of Societies For
Environmental Protection,
Darjeeling.

The Darjeeling Municipality was set up in 1850. The town then had a population of 20,000. The infrastructure and the amenities were planned and installed accordingly. And today these infrastructure and amenities are supporting a population of 106,257 (provisional Population 2001) in the Darjeeling Municipality area. The perennial source of drinking water was identified up in *Senchal.* There, two artificial lakes, first one in 1912 and the other in 1932, were constructed to store and supply water to the town. In 1978, the third lake was constructed. Despite these and other efforts to augment water availability for the town, the demand always outstripped the supply potential. This aspect seriously affects Darjeeling's civic sanitation exercise.

Darjeeling Municipality owns and administers about 102 community toilets within the municipal area. About half of them have septic tanks and soak-pits. The rest are connected to a network of 6" and 8" sewerage pipes. Due to shortage of water, particularly during dry months, these pipes get choked. Even if they are cleared, the sewage treatment plants are non-functional. For the *Bazaar* (town) area, the community collection points and treatment centres are located close to the Darjeeling Jail. For the *Kak Jhora* area, they are above the *Victoria Falls*, and the third one in the *Wilson Jhora* below the District Hospital complex, and the fourth one is in *Bhutia Bustee* below *Pradhan Gaon.* During the height of monsoon, the sewage from these collection points are washed away heavily polluting the surrounding areas.

The community toilets with their own septic tanks and soak-pits are in no better condition. Shortage of water, lack of regular cleansing and maintenance and increasing use have made them potential health hazard. Beside the community ones, there are hundreds of private toilets with their own septic tanks and soak-pits all over the municipal area. They also need to be cleaned periodically. There are others that are connected to nearby *jhoras.* Many more people still continue with the old practice of dry latrices manually cleaned by buckets. Defecating in the *jhoras* and even in the open is not uncommon. Recently, Central and State Governments have provided low-cost toilets costing Rs 5000 a piece. The construction of such toilets in built up areas is not feasible but they are a boon to those living away from the heart of town.

With the ever increasing population and growing number of hotels, holiday homes and other establishments like nursing homes, educational institutions, etc. the quantum of solid wast has grown many folds. Its handling and disposal have become a major problem. The Municipality has about 200-cemented enclosure for collection of garbage. They are inadequate and their irregular clearance create serious health problem. The residents also compound the problem by dumping their waste, ranging from construction rubble to dead pets into *jhoras.* During dry season they pose health hazard and during monsoon they get washed down with the rain posing the same problem to the people downstream.

Regular cleansing of drains, sweeping of public places and removal of garbage are accepted sanitation responsibility of a civic body. Earlier Darjeeling used to be spotlessly clean becouse of less population, responsible work culture and stricter discipline. The increasing population, the deteriorating work culture and the prevailing social indiscipline are contributing to growing insanitary condition within the town.

According to 1991 Census, Darjeeling Municipality has a total of 10.6sq.km are divided into 26 wards with a total population of 73004. The Census was conducted during the winter when most of the residents go down to the plains for various reasons. Hence this figure is misleading. An appropriate estimate is 1,00,000. The floating population

comprising tourists, students, teachers and other visitors comprise about 50,000. Thus the infrastructure meant to cater to the needs of about 20,000 people is now stretched to meet that of 150,000 people. The carrying capacity of Darjeeling town is far exceeded. Further, its growth has been haphazard. Multi-storied building structures are coming up without regard to safety norms and environmental consequences. Municipal rules and regulations are not enforced and are being brazenly flouted for quick gains. If this trend continues, then Darjeeling will soon cease to be the queen of hill towns and become a pariah shunned by all sane people.

If Darjeeling is to be saved from certain death because of its water and sanitation problems, then study to determine its carrying capacity has to be urgently undertaken. There after, steps have to be taken to identify a suitable site for an alternative township to disperse the existing population. The other steps are essential on a priority basis are as follows:

1. A long-term town plan should be urgently prepared after public debate and discussion;
2. Till such time this plan is ready, there should be an umbrella ban on all types of construction;
3. Sanitation system should be streamlined. For collection and disposal of domestic wastes, Bangalore Experiment should be tried out;
4. Plans should be prepared for recycling of solid waste and waste water; and
5. Public awareness about civic sanitary practices should be created by using mass media as well as by imposing punitive measures.
6. The bottom line is active participation of everybody-the Hill Council, the Municipality and the people-in keeping the town clean lest the charm of the Queen of the Hills is lost forever.

Landslides in Darjeeling

According to Leopald, Wolman and Miller (1964) " a slide is a sheer failure which will be set in motion when the stress along the potential surface of rupture exceeds the resistance to sheer along the surface." It is therefore common to apply the landslide to any kind of down slope rate of movement of materials on different slope conditions and materials that glide down slope.

Landslides are essentially a natural phenomenon triggered or accentuated by natural or anthropogenic (those caused by man). Avoiding the technical aspects and the complexities in the processes and mechanism of the operating factors, only those factors for which the readers can get access to visual evidence in the vicinity will be discussed here.

In Darjeeling, landslides prior to 1899 are almost unrecorded but landslides are not new in Darjeeling and every year in the monsoons landslides destroy properties and claim lives. Although Landslide is a natural phenomenon, landslides in the hills are mostly triggered by man-made structures and practices. Improper drainage systems, improper waste management are the factors which augment the landslides in Darjeeling. Sanitation is almost non-existent in the hills although Darjeeling during the British period is renowned for its effective planning and efficiency.

Unplanned growth is also a factor that triggers landslides. Today in the hills every now and then the scenery is changing with the cropping of new buildings and houses everywhere. Darjeeling now stands as one of the most populated hill stations in the world. Deforestation and hence soil erosion is also a factor responsible for landslides. When seen in the bigger picture all the factors stated above and others which have been omitted are inter related and produces a kind of a chain reaction which results not only in landslides but also in other hazards and calamities.

The first record of a major landslide was the result of extensive rainfall of 24th and 25th September 1899, which resulted in numerous landslips, destruction of state and private property, and loss of human and animal life. Even though excessive rainfall was the main cause it was also pointed out that human encroachment, defective drainage sites, undercutting steep slopes for the formation of paths, roads etc. were additional factors causing the landslides.

The second major report of landslides was due to the Bihar-Nepal earthquake of 15th January 1934. Jalapahar Cantonment, Burdwan Palace, Government school, Governor's House and Lebong Cantonment was mostly affected.

In May 1950 there was another landslide and the railway line which connected Siliguri and Gielle Khola was destroyed during that landslide. Large landslips occurred again between 3rd and 5th October 1968, which resulted in the washing away of the Anderson Bridge. In 1980 too there were numerous landslips in and around Darjeeling. In 1991 there was a major landslide in Rangli Rangliot.

So we see that landslides have occurred in Darjeeling almost every year or so which stands true even today. The recent record of a devastating landslide was in the year 1997 in Singamari, Burns Gram where many lives and property were lost. And like the year 1899 though the cause was excessive rainfall, it was found out that the landslide occurred because of the bursting of a septic tank and the seepage of drain water.

Around Darjeeling there are some permanent landslips such as the Berry slide, the slip at 29th mile Lekhey Bhir on NH31A, Karmat Poiro in Latpanchar and the great Ambootia slide, which is supposed to be the biggest slide in Asia. Another landslip is the Paglajhora along the NH55 on the way to Siliguri. Every monsoon the road collapses which results in the blockade of transport to Darjeeling and Kurseong. Corruption among the contractors and the residence along the highway are said to be responsible for the collapsing of the highway every year, because every time the Paglajhora collapses the contractors and the people get employment. And it is felt by the people that proper expertise has not been used to solve the problem permanently.

UNICEF doles out cash to tackle landslide terror.

The Telegraph-North Bengal and Sikkim-July 2002.

By Reza Pradhan.

Siliguri, July 8: The Community Based Preparedness Project (CBPP), a self-reliant programme jointly started by the State Government and the UNICEF in February this year, is aimed at tackling the growing landslide menace in Darjeeling Hills that recently caused two deaths in Giddapahar, near Kurseon.

With the introduction of this self-help project, local residents insist, the landslide victims would no longer need to depend on the various government agencies, whose tardy relief measures have resulted in loss of life and property.

The "innovative and pragmatic" programme is largely divided into three distinctive categories-awareness drive, information gathering and formation of self-help groups.

Efforts are on to spread awareness, via media and publicity materials, and educate victims on preventive measures to be adopted in the event of this recurring crisis.

Besides, the Geological Survey of India (GSI) survey reports, compiled with the help of the state-of-art satellite imagery, is a major database for the landslide prone zone. Moreover, the satellite imagery comes in handy for gathering information about remote areas of the hilly terrain.

The formation of self-help groups, however, however, holds the key to the successful implementation of this programme.

Plans are afoot to impart training to the local residents, comprising mostly the residents from vulnerable areas of the three hill-sub divisions.

"Initially, the training is being conducted in 30 village panchayats which have been short-listed on the basis of their vulnerabiltiy and also the recent inputs of the satellite imagery. Altogether, Darjeeling hills have 112 gram panchayats," said R. Ranjit, additional district magistrate of Darjeeling.

The UNICEF, in fact, is playing a major role, role in this ambitious project. The UN's initiative not only involves providing the funds but also imparting invaluable training to the locals.

"The UNICEF has already sanctioned Rs. 18lakh for the feasibility study and another Rs. 35 lakh for the CBPP, " the ADM said.

"As for the future endeavours, funds will not be a deterrent," he promised.

Presently, the training is being conducted at the district and block level.

On June 25, a training camp was held in Kurseong, where landslide affected locals underwent a rigorous programme, involving a hands-on approach to a host of employment generated activities like making of cane furniture, selling of milk and allied dairy products.

The money generated from this exercise was kept aside as a contingency fund to be used during natural calamities.

Elaborating on the basic aim of the project, Ranjit said the programme would not only instil self-awareness about the natural calamity among the hapless locals but also make them regroup and seek self-help during emergency.

"Public response, however, has been mixed. The programme has evoked very good response in Kalimpong," he said.

The project, said officer-in-charge Sonam Bhutia, would go a long way in allaying public fear.

The "laudable attempt" would alleviate the hill peoples' common perception about alienation and neglect to a great extent, she added.

NOTIFICATION

TEESTA LOW DAM PROJECTS

Vidyutnagar, P.O. Satellite Township (West Bengal)

Ref. No: NH/TLDP/SLG/F-28/ Dated : 15.03.2002

The following schemes under section 29 of Electricity (supply) Act 1948 as amended is published for general inforamtion.

TEESTA LOW DAM PROJECTS (WEST BENGAL)
STAGE – III – 132 MW & STAGE IV – 200 MW

Now, therefore the Generating Company hereby publishes the scheme in terms of Section 29 (2) of the aforesaid Act as follows:

NAME OF THE SCHEME

Construction of Teesta Low Dam Projects (Stage – III – 132 MW & Stage – IV – 200 MW) on River Teesta located inDarjeeling District of West Bengal by installing 4 units of 33MW each in a Surface Power House for Stage –

III (Near SAMCO Ropeway) & 4 units of 50 MW each in an Underground Power House for Stage – IV (Near Coronation Bridge). Both the stages are designed for peaking power generation and to be operated in tandem. This is a run of the river scheme and its entire reservoir is situated in West Bengal.

The height of the Stage III Barrage from riverbed level will be 27 metres and Stage IV from riverbed level will be 39m. The submergence area of Stage III will be 156.49 hectares and Stage IV will be 359.89 Hectares

The dams will generate, Stage-III – 132 MW & Stage-IV – 200 MW of electricity by installing 4 units of 33 MW each in a Surface Power House for Stage-III (Near Samco Ropeway) and 4 units of 50 MW each in an Underground Power House for Stage-IV (Near Coronation Bridge). The Project after it's commissioning will generate 1504.21 MU of electricity annually in a 90% dependable year in tandem operation.

The project is scheduled to be commissioned in Dec'2006 (In the Xth Plan) including 1 year for the development of infrastructure works. The estimated combined cost of the Project at Sept'2001 Price Level is Rs.1947.06 Crores including IDC of Rs.252.12 Crores. Expected completion cost of the Project is Rs.2173.20 Crores including IDC of Rs.275.64 Crores. Levelised Tariff (combined): Rs.2.98 per KWH.

In pursuance of the provision of the Electricity (Supply) Act, 1948, the National Hydroelectric Power Corporation Ltd. shall exercise all powers vested in a generating company under the said Act for the purpose of the aforesaid scheme.

Power Grid Corporation of India Ltd will provide suitable integrated power evacuation system matching with the commissioning schedule of Power Plants. This shall be done in consultation with CEA/West Bengal State Electricity Board.

The above notification featured in the website of NHPC – **www.nhpcindia.com** Notification **Ref.No: NH/TLDP/SLG/F-28/ of** 15/03/2002and is the first official document discussing the proposed Teesta Dams Stages III and IV. This added to the already heated debate on the Proposed Teesta Dams III and IV.

Stage III submerges 9 families in and Stage IV - 10 families. The NHPC will provide cash compensation based on their Environmental Impact Assessment (EIA)– socio economic study and details are presented in the Environmental Impact Management Plan (EIMP). The water will also submerge forestland and also sections of National Highway 31A leading to Sikkim. The forest submerged will be compensated by afforestation programme described in the compensatory afforestation segment of the EIMP. The submerged sections of NH31A will be diverted through the Mahananda Wildlife Sanctuary.

Electricity is a must for economic development and hydroelectricity is one of the most dependable, cheap, renewable, economical, efficient and eco-friendly. This is the rationale adopted for the Proposed Teesta Dams III and IV and NHPC is the implementing organisation to construct the dams based on an agreement between the West Bengal State Government and Central Government of India.

With the little of information about the proposed Teesta Dams III and IV collected from NHPC, we would like to bring to light various points for discussion. Key word in development today is 'people's participation'. However, in such an important project like this the people of the hills including the local government have had no role in the planning process leave alone participate in the implementation. Not only have the people had no opportunity in participation but their very roots are being submerged at the dam site. Thus, instead of adopting a sustainable development approach the project has adopted a top down approach which has been rejected worldwide.

Projects like this must be preceded by a non-bias Environmental Impact Assessment (EIA) which must not begin with an objective of proving the need and feasibility of the project. This EIA must be made a public document. The North Bengal University has undertaken the EIA and the Jan Kalyan Manch the people's organisation of the dam site have been protesting that the data collection for the socio-economic segment of the EIA was not conducted properly. NBU students, who conducted the socio-economic survey were not transparent with the respondents with regard to the rationale of the survey, so they obviously did not get authentic data.

Transparency is absolutely vital to fulfil people's right to information. Till date, the EIA has not been made a public document leave aside the process adopted in conducting the EIA. The NHPC representatives during the panel discussion on 21st July 2002 at Nepali Sahitya Samelan Bhawan, Darjeeling promised that the copy of the EIA will be made public by keeping a copy of it at the District Magistrate's office. Two months after the EIA is made public, NHPC will conduct a Public Hearing to discuss the EIA with the people before the project is implemented. An addition to the lack of transparency is the fact that the notification **Ref.No: NH/TLDP/SLG/F-28/ of** 15/03/2002 was posted in the NHPC website – **www.nhpcindia.com** in the **bids/miscellaneous** section. The latest in the non-transparency is the Invitation for Prequalification (International Competitive Bidding) for Civil Works by NHPC (9th August 2002, The Statesman) even prior to the EIA being made public and the Public Hearing.

The EIA has an Environmental Impact Management Plan (EIMP) which essentially means that the project does have some negative impact. A section of the EIMP has a compensatory afforestation programme where it proposes to compensate the submerged forest area by an afforestation programme elsewhere. The question is whether or not, it is possible to compensate a submerged biodiversity that too a biodiverstiy hotspot, elsewhere. It is also proposed that the submerged sections of the NH31A be diverted through the Mahananda Wildlife sanctuary which is totally opposed to the green image of the project.

The dam sites lie in the seismic zone IV to V (V being the highest probability zone) and an earthquake of giant proportion will be catastrophic to say the least. According to Professor Subir Sarkar, NBU, Siliguri and Jalpaiguri and sections of Bangladesh will be washed away if the dam breaks. The controversial reservoir induced seismicity is of no relief as the dam sites lie above active fault lines.

The dam site area has been designated under landslide prone area zone IV, the highest zone, which will add to the silt and boulder load to the river shortening the proposed 50 years life span of the dam. The construction process of the dam and its allied structures will invite further landslides.

According to Professor Subir Sarkar, NBU the River Teesta has the highest sediment rate in the world. Thus 50 years life-span of the dam is highly questionable. In case of a cloudburst like the 1968 one, the Teesta can carry a silt load of 10 years average at one instant and silting the dam at alarming rates. The flood of 4th October 1968 at Anderson Bridge gauge/discharge site on River Teesta in the Sub-Himalayan Region of West Bengal is the highest flood record in India. It attained 18.1 metres above danger level at this site.

The rehabilitation package is also not clear and is questionable. It is restricted to the dam site only and the consequent to immediate dam construction and its submergence and does not focus on the long-term effects of the dams. The people have been promised employment, and facilities like education, water, house, post offices. Sadly, experience till date have been otherwise. It has been seen that promises prior to construction and real rehabilitation have been poles apart. Local employment is not a reality as most of the technical personnel and even labourers working on the dams will not be of local origin. Already a workers settlement is being proposed to be established in the Mungpoo Cinchoona Estate land.

12% of the electricity generated is supposedly for the WBSEB discretion. Past experiences have left a bitter taste as both Rammam and Jaldakha generate electricity for people other than those living in the vicinity of the project area.

According to Chairman, West Bengal State Electricity Board, the transmission and distribution loss in West Bengal is 40%, while the justifiable technical losses are about 15%. If we can bring down our transmission and distribution loss to 15%, then we may gain 25% power. A comparison as to the amount of power (in terms of MW) gained by reducing transmission and distribution loss vis-à-vis combined generation capacity (proposed) of stage III and IV, reveals that the feasibility of the project is questionable. If the transmission and distribution upgradation had been taken up, these two proposed hydro-projects would not have been required.

Thus considering all the points it is imperative that the cost benefit analysis of the project be undertaken before implementation. Transparency and people's participation is of utmost importance and the project should not be for some at the huge cost of others. It should also consider inter and intra generational equity and our common future.

CHECKLIST FOR ENVIRONMENTAL PUBLIC HEARINGS

(Manju Menon and Kanchi Kohli)

Some points to keep in mind before, during and after the public hearing takes place:

Before the Hearing:

1. Ask for a copy of the complete EIA, sometimes you may find it on the reference shelf of the Pollution Control Board library. Check for the baseline data. Chances are that the EIA will only have one season data. Demand a comprehensive EIA, which should have information of the past 12 months to 18 months. Check the introduction, and the application form that the project proponent has to fill up. This form contains information about the project. Verify if the data given by them is accurate and consistent.
2. Try to procure the executive summary. The public notice will specify in which places the document is available.
3. After you get a copy of the EIA/executive summary, try translating it into local language and distribute it in the locality. It is mandatory for the executive summary to be available for anyone. But this is not the case with the EIA report. However, it might be shared by the Pollution Control Board office for reference.
4. The exact location of the project will be available in the executive summary. Please obtain this information on the exact location and make an immediate site investigation.
5. Try and fix a mock public hearing at least 7 days in advance, so that you plan what questions are going to be raised and by whom.
6. Try communicating the message of the public hearing to as many people as possible and most of all to the people living closest to the project site and who are going to be directly affected by the project.
7. Find out from the Pollution Control Board office and/or the DC's office as to who are the members on the Public Hearing Panel. Karnataka has a full listing of the panel members for each district. Assam might have something similar. If you come to know of the list you can communicate with the panel members before hand.
8. Check if the venue of the Public Hearing is convenient to Project Affected Persons.
9. Check on which date the Public Hearing Notice was issued. Was there sufficient notice (minimum 30 days) given for written suggestions and objections? Is the date of the hearing 30 days after when the notice was issued? This is mandatory.

During the Hearing:

10. Keep a watch during the hearing, if official minutes of the proceedings are being recorded, as they should be. The minutes should be made available at least within the next 90 days to all those who want to see them.

11. Check if all the members of the Public Hearing Panel are present on the dais. Also check for anyone on the dias who is not a panelist.
12. The proceedings should be video taped. Those attending the hearing can organize the filming to be done on their own. They can also ask for an official copy for documentation purposes.
13. Any oral objections that are raised during the hearing could also be given in writing to the DC who is the chairperson of the Public Hearing Committee. Make sure that the objections raised are recorded minutely.

After the Hearing:

14. Try and procure the official minutes of the public hearing.

Darjeeling NGO Network,
c.o.
SEED, SUMI Building, Kalimpong.
and
Darjeeling Ladenla Road Prerna,
RCDC Hayden Hall, Darjeeling.

Environment

Biological Diversity

Source: Biodiversity Assessment and Conservation Planning, Kanchenjunga Mountain Complex.

Species Richness:

Darjeeling supports approximately 4000 flowering plant species, including 28 rhododendrons and 322 orchids. Fifty-three of the orchid species are listed as rare or endangered. At least 144 of the plant species are endemic to the eastern Himalayas and 29 are endemic to Darjeeling.

One hundred and thirty one species of mammals are recorded in Darjeeling, including red panda, Himalayan black bear, clouded leopard, tiger, Himalayan tahr, goral, gaur, and pangolin. Early records list 550 bird species. At least 125 freshwater fish and 51 reptile and 25 amphibian species are also recorded from this area.

Forest Classification and Management:

Darjeeling's forests are classified according to six different types, segregated by elevation. Each of these primary forest types may be further divided into more specific categories, according to moisture availability, soil, and history of disturbance. The six primary types are described as follows.

1) Terai and lower hills to 300m
2) Tropical Forest, 300-900m
3) Subtropical Forest, 900-1800m
4) Lower Temperate Forest, 1800-2400m
5) Upper Temperate Forest, 2400-3000m
6) Subalpine Forest, 3000-4000m

Darjeeling's forest are managed as reserve forests (1168km²), protected forest (17 km²), national parks (167 km²), wildlife sanctuaries (197 km²) and unclassified state forests (11 km²). Effective forest management is especially important here because Darjeeling's human population density is high (413 persons/ km²) and growing rapdily.

Existing Protected Area System:

Darjeeling's protected area system includes five national parks and wildlife sanctuaries that cover 11% of the total area of the Darjeeling District. Each is described briefly in the following pages.

SENCHEL WILDLIFE SANCTUARY:

(39 km², 1100-2600m elevation, established 1940)

This protected area serves as a southward extension of Singhalila National Park and is one of Darjeeling's older sanctuaries. In addition to biodiversity conservation, this unit contains a reservoir and serves to protect the catchment for Darjeeling City's municipal water supply. Moist temperate forest comprises the main vegetation type and the sanctuary supports large mammals including goral, serow, Himalayan black bear, and pangolin and barking deer. Because roads and public thoroughfares penetrate the sanctuary, degradation of wildlife habitat is an ongoing management problem. A few of the more important scientific research projects in Senchel Wildlife Sanctuary include: (1) socioeconomic studies of forest villages conducted by the Department of Forests, (2) Phyto-sociological studies of the vegetation at Tiger Hill, Senchel.

MAHANANDA WILDLIFE SANCTUARY

(129 km², low elevation):

This protected area is located on the west bank of the Teesta river in the low-lying terai region of Darjeeling. Forest types include riverine grasslands, *Acacia-Darlbergia ("khair-sisoo")* riparian forest, *Bombax-Albizia ("simal-siris")* floodplain forest, and *Shorea robusta* ("sal") forest. In general, mixed evergreen forest occur near the river where soils are moist all year round and drought-decidious hill forest communities occur on drier slopes at higher elevations. Important mammals include serow, Himalayan black bear, gaur, chital, sambar, elephant, barking deer, wild boar, jackal, wild cats, civets, rhesus macaque, Assamese macaque, and common langur.

Illegal fuelwood and timber cutting, as well as cattle herding are common in the sanctuary. In order to be effective, managers of the reserve will need to reach an understanding with the residents of forest villages (*khasmal*) adjacent to the sanctuary who illegally cultivable land and graze cattle in the sanctuary.

Important research studies conducted her include: (1) a survey of floral and faunal resources in collaboration with the Nature Environment and Wildlife Sanctuary; (2) a study on control of illegal trade in the Mahananda Wildlife Sanctuary in collaboration with the Wildlife Protection Society; (3) reintroduction of spotted deer (prey base of the tiger); and (4) a Tiger Census conducted by Department of Forests.

SINGHALILA NATIONAL PARK

(core zone 79 km², buffer zone 30 km², 2400-3600m elevation, established 1992)

This national park supports four vegetation tyes, lower temperate evergreen broadleaf forest, upper temperate *Tsuga dumosa* forest, subalpine conifer forest, and bamboo, which tends to colonize slopes where the forests have been destroyed by fire. Important mammals include red panda, Himalayan Black Bear, Leopard Cat, Barking Deer, Serow, Yellow throated Marten, Great Estern Horseshow-Bat, Assamese Macaque, wild pig, and Clouded Leopard. Important bird species include several pheasants and partridges including Satyr, Trapogan, Kaleej Pheasant, Blood Pheasant, Common Hill Partridge, and Red-breasted Hill Partridge.

Singhalila National Park is bounded by Rabongla Khola, Sikkim in the north, and Nepal in the west and south. The lengthy western boundary defined by the border of Nepal has a motor road that extends from Mane Bhanjyang to Phalut. In addition, several human settlements are found in and around Sinhalila National Park. This area is also popular for trekkintg and the number of tourists visiting Singhalila National Park has increased in recent years.

Important research studies here include an ecological study of red panda and satyr tratopan in Singhalila National Park and its adjoining areas, funded by the Department of Forests in collaboration with the P.G. Department of Zoology, Darjeeling Government College.

NEORA VALLEY NATIONAL PARK

(88 km², middle elevation):

This unit conserves a relatively inaccessible patch of late-successional (old-growth) forest that inludes four main forest communities subtropical mixed broadleaf forest, lower temperate evergreen forest, upper temperate mixed broadleaf forest, and rhododnedron forest. Neora National Park seems to be rich in mammal species. Elephant, Red Panda, goral, serow, Himalayan Thar, tiger, Spotted Leopard, Clouded Leopard, Leopard Cat, Assamese Macaque and numerous squirrel species have all been reported. Human pressure within the national park is limited Adjacent areas support plantation of tea and *Cinchona* (a tree used to produce quinine).

Important research inlcudes a study of the bio-ecological resources of Neora Valley National Park, funded by the Department of Forests and implemented by North Bengal University.

JOREPOKHARI SALAMANDER WILDLIFE SANCTUARY

(0.04 km², middle elevation):

The four hectare sanctuary consists of a small lake that provides necessary protection to *Tylotriton verrucossus*, an amphibian species protected in India under schedule 2 of the Wildlife Protection Act, 1992. This Salamander of Himalayan Newt, is a striking black and orange species, rare but widely distributed form western Yunnan to northern Thailand and as far west as Darjeeling. It has not been reported in Nepal. Habitat for this sensitive species is under severe pressure from human activities like fish aquaculture organic pollution, draining of wetland areas for conversion to agriculture.

Important research includes two studies on the ecology and habitat of the Himalayan Salamander. The first study was performed in collaboration with the Department of Forests and Darjeeling Government College. The second study is being conducted in collaboration with the WWF-Eastern Region and North-eastern Hill University.

Government agencies involved in conservation of biodiversity and natural resources:

- The Department of Forests has a key role, which looks after the welfare of the forest and biodiversity. The Department has the following branches (1) Divisioinal Forest Office, and Silviculture (Hills) Division prepare forestry research, supply quality seeds and administration of the Loyd's Botanical Garden. (2) Working Plans (North) Division: prepare for the management of forests and monitoring the implementation of the same. (3) Kurseong and Kalimpong Soil Conservation Divisions: carry out soil conservation work in forest areas. (4) Forest Village Development Divison (Jalpaiguri): monitors welfare of forest villages in North Bengal (including Darjeeling). (5) Minor Forest Produce Division (Siliguri): conduct inter cultivation of agro-forestry products in the forest plantations in the north Bengal (including) Darjeeling and develop marketing plans.
- The West Bengal Forest School, Dowhill (Kurseong), imparts forestry training to deputy foresters and rangers.
- Padmaja Naidu Himalayan Zoological Park undertakes activities related to conservation and breeding of endangered Himalayan fauna and for creating awareness among the public for conservation of nature.
- Eastern Forest Ranger's College, St. Mary's (Kurseong), imparts forestry training to Forest rangers.
- The Regional Research Station, Sukna, conducts research studies sponsored by the Government of India.
- The Wildlife Division manages and administers National Parks and Wildlife Sancturaries.
- Darjeeling Natural History Museum administers deer parks, animal rescue centers and interpretation centers.
- The Zoological Survey of India and Botanical Survey of India are involved in faunal and floral studies.

Non-Governmental agencies involved in conservation of biodiversity and natural resources:

- Federation of Societies for Protection of Environment, established in 1991. There are 31 similar organizations affiliated with this society, with 350 individual members. This NGO has taken-up various issues relating to environment and conservation. Some of the activities include (1) awareness programs in collaboration with the Forest Department; (2) plantations and awareness programs; (3) a two-year joint forest management program; (4) watershed management at Yamakhung; (5) awareness program on AIDS and (6) a program on the development of the minority communities.
- Earth Group. Established in 1998 under the West Bengal Society Registration Act, the main objectives of the group are to protect the environment and carryout sustainable development. One of the major goals of the group's activities is to promote community involvement in the protection of the resource bas through the Joint Forest Management System.
- SERVE (Save the Environment and Regenerate Vital Employment). In 1993, Professor Gunter Faltin, who started marketing Darjeeling tea in Germany, initiated a reforestation project. SERVE was formed to evaluate the program. In 1996, the project was handed over to WWF-India. Eastern Region Office. The main activities that are carried out are nurseries, tree planting in degraded areas, bee-keeping, mushroom cultivation, salamander habitat preservation and conservation awareness.
- Region Community Development Committee (R.C.D.C.). Established in 1993 by the Darjeeling Jesuits of North Bengal, it has a mandate to evolve and implement sustainable human development models for Darjeeling and its adjoining hills. It has grassroots activities and also provides support services to other organizations.
- Environment Protection Society: Established in 1986, it is a voluntary association of scientists, social activists, teachers, students and people in villages at the grassroot level. Some of the activities of this organization involve creating awareness among the rural people through audio-visual and eco-development programs and public hearings. It is also involved in joint forestry management (JFM) schemes and other income-generating activities using natural resources. A journal, 'Himalayan Paryawaran' of the Society started in 1993, highlights the environmental and development issues of the Himalayan region.

Opportunities to Fill Gaps and Connect Existing Protected Areas.

Review of the distribution of plants, animals, existing forest cover and protected area in Darjeeling suggests that there are two key areas in which ERBC initiatives could be particularly beneficial: (1) the area that separates the Neora Valley National Park and Mahananda and Senchel Wildlife Sanctuaries, and (2) the area that adjoins Singhalila National Park. Both of these areas have considerable ecological importance in their own right. Furthermore, conservation measures taken in these candidate areas will significantly increase connectivity among existing protected areas. It is

important to emphasise that because people inhabit these areas, conservation efforts should attempt to secure biodiversity through progressive, community based management, not simply extending existing parks.

A summary of the results of gap analysis for these two candidate area is presented here.

NEORA-MAHANANDA-SENCHEL CONNECTIVITY

Forests in Ruka, Chichu, and Mo, east of Neora National Park, all contain high biodiversity and call for a greater level of protection with emphasis on wildlife conservation. Similar forest protection is needed in Rehnok, Rhaser, Phankasari, Ambeok, and Dalingkot on the western boundary of Neora National Park. Given their high proportion of land under forest coverage, the forests of Mai, Pogu, Lehti, Ramthi, Churanthi, Lish, Mongpong, Panbu, and Sulling could serve to connect Neora Valley National Park to Mahananda Wildlife Sanctuary, a straight-line distance of 28 km.

The Mongpong Reserve Forest in an important elephant corridor. This area was protected as a wildlife sanctuary from 1937 to 1946, but it has not been treated as such in recent times. If protection were to be upgraded, Mongpong, Panbu, and Sulling would serve to effectively buffer the eastern part of the Mahananda Wildlife Sanctuary. In Mangpu, a large *Cinchona* plantation adjoins the northwest boundary of the Sanctuary. Although it is not known how well *Chinchona* plantations support the processes of intact ecosystems, it is reasonable to assume that they may provide migration corridors for the same of the mammals to disperse into nearby forest areas.

The *Cinchona* plantation mentioned above shares its northwest boundary with Senchel Wildlife Sanctuary. To the south of Senchels WS, Chattakpur and Mahakaram forests are important candidates for conservation management as they are situated less than 1.5km from Mahananda Wildlife Sanctuary, and separated from Mahananda by a tea estate.

SINGHALILA EXTENSION

The reserve forest around Singhalila National Park has high floral and faunal diversity; which warrants increased protection. Connectivity between Senchel Wildlife Sanctuary and the Singhalila Range will probably remain incomplete, however, because larger settlements exist in Jore Bungalow and because forests in degraded to serve as ecological corridors. This is unfortunate, because such connectivity could extend the protected area of the Singhalila Range to over 200 km^2. The possibility does exist, however that Singhalila National Park could be connected to the Jorepokhari Salamander Sanctuary.

Ditribution of rhododendron species in Darjeeling Distrcit.

Species	Distribution/locality	Status
R.hondendron grande	Tiger hill, tonglu (Sain, 1958), Darjeeling-Dowhill, Rimbick, rammam, Tonglu, Damsang, Neora Valley (Bhujel, 1997)	Common
R.barbartum	Tonglu (Sain, 1958) Kalipohkari-Sandakphu, Ramamphalut (Bhujel, 1997)	Common
R.arboreum	Etire Darjeeling hills (Sain, 1958), Gumpahar, Damsong forest (Cowan and Cowan, 1929), Neora valley, Senchel (Bhujel, 1997)	Common
R.cinnabarium	Tonglu, Kalipokhari (sain, 1958), Rachela, Halidanra,Tonglu-phalut (Bhujel,1997)	Common
R.falconeri	Tonglu, kalipokhari (Sain, 1958), Rachela, Hatidanra, Tonglu-phalut (Bhujel 1997)	Common
R.hodgsoni	Sandakphu, phalut (sain, 1980,Bikhey, Sandhakphu-Phalut (Bhujel, 1997)	Common
R.triflorum	Tonglu, Sandhakphu (Cown, 1929) Kaiyakatta (per ob.), Tonglu- Jaubari	Rare
R.dalhousie	Tonglu, (Sain 1958) Labha, Simkuna, Snechel, Dhotrey, Rimbick (Bhujel 1997)	Common
R. Lindleyi	Tonglu	
R.griffithianum	Gairibans, Dothrey, Rammam, Palmajua, Neora valley (bhujel 1997)	Frequent
R.auklandi	Road between Phalut and Shandakphu	
R.edgeworthi	Gairibans (Cowan, 1929), Rimbick- Tonglu, Neora Valley, (Bhujel 1997)	
R. smithi	Sandakphu, (Sain 1997)	
R. maddeni	Rachela, Ramman, Gairibans	Sparse
R.ciliatum	Sandakphu, (Cowan, 1929)	
R. decipens	Tonglu, Sandhakphu (Sain, 1958) Kalipokhari- sandhakphu, Ravhela (bhujel 1998)	Sparse
R. campnulatum	Sandhakphu	
R. aeruginousm	Phalut	

R. thomsoni	Sandhakphu (per obs), bikhey- sandhakphu, phalut valley	Sparse
R.lepidotum	Sandakphu, Jaubari- Sandakpur, Phalut	Very common
R. anthopogan	Singhalila Ridge, Sandhakphu, Phalut Gosha	
R.nivale	(per comm. M. Tamang)	
R. cinnamonoeum	Same dist as that of arboreum, Sandkphu, Rachela, Gorkhey (Bhujel 1997)	
R. vaccinoides	Jalaphar, Rangbul (Cowan, 1929), Neora valley, Rimbick, Tonglu (Bhujel 1997)	
R. camplocarpum	Phalut, Gorkhey (Bhujel & Yonzon, 1989)	Sparse
R. arboreum var.album	Darjeeling, Senchale, Rimbick, Kalipokhari- Sandakphu, Neora valley	Abundant in Rachella, rare in Darjeeling
R. Wallichii	Ramam, Sandakphu, Phalut, Gorkhey	Abundant
R. Fulgens	Kalipokhari- Sandakphu	sparse

Some of the Orchids species recorded from Darjeeling (information collected from publications of Pradhan (1976 & 1979) and from the herbarium of Llyods Botanical Garden, Darjeeling

Scientific Name	Locality/ Distrubution	Remarks
Paphilipedilum V. teestaensis	Teesta Valley	
Diplomeris hirsuta	Darjeeling between 300-400m	
Orchis habenaroides	Darjeeling at 4000m	
Herminium quinquelobum	Tendong and Senchel Bet 2500-3000m	
H. pugioniforme		
H. angustilabre	Darjeeling between 3500-4000m	Only recorded from Darjeeling.
H.monophyllum		
H. juncea	At 4000m	Only from Darjeeling and Sikkim Himalayas.
Plantanthera, Bakerana	Between 3500- 4000m	Endemic to Darjeeling and Sikkim
Hologlossa pubescens	Between 1500-2000m	
H. hiermanniana	Between 2500- 3000m only reported from Darjeeling	
Oberiana Prainiana	Teesat Valley near Sevoke (300-400m)	
O. Pahyrachis		Scarce in Darjeeling
O.longilarchis	Darjeeling between 1700-2000m	
O. aurichulata	Senchel range and Ruugbee at 2000m	
O.pyrulifera	Teesta Valley (300-2000m)	
O. nyraintha	Darjeeling (1000- 1750m)	
O. pachphyllia	Near Siliguri at the base of Sukna Himalayas at 300m	
O. brachystache	Teesta Valley (300-400m)	
O. irridifolia	Darjeeling Tropical Valleys	
Malarus aphyllia	Teesta Valley (300-400m)	
M. Calcophylla	Teesta Valley (300-400m)	
M. khasiana	Darjeeling (1000-2000m)	
M. manimouricziana	Darjeeling (600-1400m)	
M. josephiana	Darjeeling (800-1200m)	
Liparis gambellei	Darjeeling at 2000m	Endemic to Darjeeling
L. diflexa	At 700m	Distributed only in Darjeeling and Sikkim
L.pseudobulbs	Singhalila range, Sandakphu	
L. plantaginea	Darjeeling (300-700m)	
L. bistriata	Darjeeling (1000-1700m)	
L. bistriata var spathulata	Darjeeling (1000m)	Only recorded from Darjeeling

L.manni	Darjeeling at 350m	
L. duthiei	Teesta Valley (300-1000m)	
L.perusilla	Senchel (200-2600m)	
Tainia waryana	Teesta valley (350-500m)	
Coelogyne fuscencens vridiflorum	Near kalimpong at 1300m	
Dendrobium cathcartii	Darjeeling (600-800m)	Endemic only in Darjeeling
Porpari fibulioformis	Darjeeling (600-800m)	Found only in Darjeeling
Bulbophyllum ebulbum	Sevoke (500m)	
B. gamblei	Ghoom (1650m)	Endemic to Darjeeling and Sikkim
Agrostophllum breripes	Darjeeling (500-700m)	Endemic to Darjeeling and Sikkim
Tipalaria josephii	Darjeeling (3500-500m)	Unique species found in Darjeeling and Sikkim
Eulophia geniculata	Darjeeling (300-500m)	Endemic to Darjeeling and Sikkim
Cymbidium munronianum	Darjeeling (500m)	Endemic to Sikkim, Darjeeling and Bhutan
C. simonsianum	Teesta valley (300m)	
Arochanenae punctata	Darjeeling (1600-2000m)	
Thrxpermum arachnites	Jaldhaka (Darjeeling)	
Pomatocalpa armigerum	Darjeeling (300-500m)	
Vanda pumila	Darjeeling (500-600m0	Endemic to Sikkim and Darjeeling
V.pumila var. multiflora	Darjeeling (700-1300m)	
Habenaria nematocaulon	Darjeeling (3000-3500m)	
H. biermnniana	Darjeeling (2500-3000m)	Only recorded from the Darjeeling Himalayas
Peristylus pseuclophrys	Darjeeling (1800m)	
Goodyera fumata	Rambi Darjeeling	Scarce
G.hemsleyana	Darjeeling (300-3500m)	Endemic to Darjeeling and Sikkim
Zeunine reflexa	Mungpoo (1200m)	Recorded on from Darjeeling
Z. longifolia	Darjeeling	
Aphyllorcis alpina	Darjeeling (4000-4500m)	Endemic to Darjeeling Himalayas
Satrym nepalensis	Tiger hill	Common
S. nepalensis versiliata	Darjeeling	Common
Doritis taenalis	Darjeeling	Common

Distribution of Mammals in the Darjeeling Himalayas

Species	Scientific name	*Locality of distribution*
Common Tree-shrew	Tupaipa glis lepcha	Nimbong (Baptista, 1916), Sivok (Crump, 1915)
	Taipa micrura	
Eastern Mole	Taipa micrura	Gopaldhara, Peshok (Bapista, 1915), Selimbong (Ghose, 1975)
Sikkim large clawed shrew	Soricus n. nigerscens	Ghoom (Crump 1915, Gopaldhara (Bapista, 1915) palmjua (Khajruia, 1958)
Hodgson's Brown toothed shrew	Soriculus c. caudatum	Mungpoo (Lister, 1879) sandakphu (Khajuria, 1958)
Indian long tailed shrew	Soucus leucops	-
House shrew	Suncus murimus caerulenscens	-

House shrew	Suncus m. soccatus	Ghoom (Crump, 1915), Kalimpong (Baptista 1915) Kurseong (Annandale, 1986), Manibhanjyang (Ghose, 1974), Pashok, Pedong, Rangiroom (1915-1916), Ragiroom (Ghose 1980), Tarkhola (Khajuria, 1958)
House shrew	Suncus m. griffithi	Ghoombhanjyang (Ghose, 1975) Tonglu (Ghose 1975)
Pygmy shrew	Suncus etruscus pygmaeoides	-
Grey shrew	Corcidura attentuta rubricosa	Gopaldhara (Baptista, 1915) Mungpoo (King 1877), Peshok (Baptista, 1915), Takdha (Khajura 1958)
Himalayan water shrew	Chimmarogale platycephala himalayica	Peshok (Baptista, 1915)
Indian fulvous bat	Rousettus leschenaulti	Gorubathan (Ghose, 1981), Tarkhola (Khajuria 1958)
Indian flying bat	Pheropus g. gigantieus	Siliguri (Crump, 1915)
Short nose fruit bat	Cynopterus s. spynix	Gorubathan (Ghose 1981), Kumani (Ghose 1985), Sukana (Das, 1980)
Niphan's fruit bat	Magaerops niphanae	-
Blandford's fruit bat	Sphaerias blandfordi	Darjeeling (King, 1877), Goomti (Das, 1983), Palmajua (Ghose, 1974)
Great long-tongued fruit bat	Macroglossus sobrinus sobrinus	Darjeeling (Stoilicza, 1871)
Long armed stealth tailed bat	Taphozous l.longimanus	-
Necked bellied tomb bat	Taphozous nudiventris	-
Indian false vampire	Magederma I. Lyra	Ghayabri (Patridge, 1982), Sukna, Lopchu (Das, 1980), Siliguri (Crump, 1915)
Intermediate horse shoe bat	Rhinolopus affinis himalayanus	-
Rufous horse show bat	Rhinolopus r. rouxi	Kumani (Ghose, 1985), Nimbong (Baptista, 1916)
Least horse shoe bat	Rhinolopus p. blythi	Darjeeling (Blankford, 1857), Peshok, Nimbong, Sangser (Baptista, 1916)
Little Indian horse shoe bat	Rhinolopus l. lepidus	-
Trefoil horse shoe bat	Rhinolopus t. trifoliatus	-
Great eastern horse shoe bat	Rhinolopus luctus perniger	Darjeeling (Shrewill, 1852, 1872), Nimbong (Baptista, 1922)
Pearson's horse shoe bat	Rhinolopus pearsoni	Darjeeling (King, 1878)
Sri Lanka Giangantic leaf nosed bat	Hipposideros lankadiva	Darjeeling (Anderson, 1867)
Fulvous leaf nosed bat	Hipposideros f. fulvus	Tonsong
None	Hipposideros pomona gentilis	Peshok (Baptista, 1915)
Great Himalayan leaf nosed bat	Hipposideros a. armiger	Darjeeling (Sherwill, 1852), Goomti (Das, 1980), Nimbong, Peshok, Tongsong (Baptista, 1915, 1916), Lopchu, Mahandi (Das 1980)
Tailess leaf nosed bat	Coelops f. frithi	-
None	Tadarida teniotis insignis	Darjeeling (Anon, 1970)
Nepal Bat	Myotis mystacinus nipalensis	Darjeeling (Elwes, 1871)
None	Myotis silgorensis	
Intermidiate Bat or hairy faced bat	Myotis annectans	-
None	Myotis sicariius	-

Hodgon's bat	Myotis f. formosa	-
None	Eptesicus talei	Darjeeling (Sherwill, 1853)
Noctule	Nyctalus noctula labiatus	Darjeeling (Stoloczka, 1871), Sangser (Baptista, 1916)
Indian Pipistrelle	Pipistrillus c. comorondra	Gopaldhara Nimbong, Peshok, Pedang (Baptista, 1915, 1916), Gorubathan, (Chowdhury, 1980) Tukdha
Pegu Pippestrelle	Pipistrellus pegunesis	-(Darjeeling Dist. Sinha, 1990)
Babu Pippestrelle	Pipistrella babu	Paperkheti near Gorubathan (Chowdhury, 1980) Shukna (Das, 1980), Takdha
Thomas Pippestrelle	Pipistrella cardonae	-
Grizzled Pippestrelle	Pipistrella mordax	-
Club footed bat	Tyloncytris pachypus fulvida	Darjeeling (Stoliczka, 1871), Kalimpong, Peshok (Baptista, 1915), Sivok (Crump, 1915)
Eastern Barbestrella	Barberstella leucomelas darjelingnesis	Darjeeling (Anderson, 1869), Nimbong (Baptista, 1916)
Harlequin	Scotomanes o. ornatus	Darjeeling (Alkinson, 1870) Pashok (Baptista 1915), Sivok (crump, 1915)
Lesser yellow bat	Scotophilus k. kuhli	-
Long eared bat	Plecotus auritus haomchrous	Darjeeling (Sherwill, 1953)
Long winged bat	Murina Leucogaster rubex	-
White bellied tube nosed bat	Murina huttoni huttoni	Sangser (Baptista, 1916)
Peters' Tube nosed bat	Murina tubinaris	-
Scully's Tube nosed bat	Murina c. cyclotis	-
Round eared tube nose bat	Harpiocephalus harpia lasyurus	-
Hairy winged bat	Kerivoula hardwickei deepresa	-
Painted bat	Kerivoula papillosa lenis	-
Rhesus macaque	Macaca m. mulatta	Sepoydhura, Sukna (Partridge, 1892), Tarkhola (Khajuria, 1996)
Assamese macaque	Macaca assamensis pelops	Pashok, Sukhiapokhri (Crump, 1915), Takdha (Khajuria, 1958) Tarkhola (Khajuria, 1966)
Hanuman langur	Presbytis. E. entellus	-
Indian pangolin	Manis crassicaudata	
Chinese pangolin	Manis pentadactyla	Jogihora (Anon, 1995)
Asiatic jackal	Canis aureus indicus	Dyati (Stevons, 1921), Ghoombhanjyang (Ghose, 1974), Pedong (Baptista, 1916), Hatisar (Anon, 1996)
Red fox	Vulpes vulpes	-
Bengal fox	Vulpes bengalensis	-
Dhole or Indian wild dog	Coun alpinus primaevus	-
Asiatic black bear	Selenarctos thibetanus laniger	Garibans, Kaiyakhatta, Kalimpokhari, (Pradhan, 1998), Latpanchor (Anon, 1996)
Sloth bear	Melerus u. ursinus	-
Red panda	Ailurus f. fulgens	Garibans, Kaiyakhatta, Kalimpokhari, Sandakphu, Phalut, Upper Gorkhrey (Pradhan, 1998),
Stone martin	Martes fonia intermedis	Joributi, Rechila (Biswas et al., 1999)
Yellow throsted martin	Martes flavigula flavugula	Gairibans, Kaiyakatta, Kalimpokhari, (Pradhan 1998), Joributi, Rechilla (Biswas et al. 1999)
Yellow bellied weasel	Mustela k. kathiah	-

Siberian weasel	Mustela sibrica subhemachalana	Upper rechila chak (Biswas et al., 1999)
Hog badger	Arctonyx c. collaris	-
Common otter	Lutra lutra nair	Mahananda (Anon, 1996)
Oriental small clawed otter	Aonyx cinerea concolor	-
Common civet	Paradoxurus hermaphroditus	-
Three banded palm civet	Arctogalidia trivirgata	-
Himalayan palm civet	Paguma larbvata grayi	Rechilla and surrounding areas (Biswas et al,. 1999)
Small Indian civet	Viverricula indica	Mohurgong block (Anon, 1996)
Toddy cat	Paradoxurus hermephroditus	Sukna (Anon, 1996), Rechila and surrounding area (Biswas et al., 1999)
Small Indian mongoose	Herpestes a auropunctatus	-
Crab eating mongoose	Herpeestes urva	-
Jungle cat	Felis chaus affiniss	Gulma (Anon, 1996), Rechila chak Joributi (Biswas et al., 1999)
Himalayan marbled cat	Felis marmorata charltoni	Joributi forest (Biswas et al,. 1999)
Golden cat	Felis temmincki	-
Leopard cat	Felis bengalensis	Joributi (Biswas, 1999), Gairibans (Pradhan, 1998), Joghijhora (Anon, 1996)
Fishing cat	Felis chaus affiniss	Alubari, Joributi (Biswas et al., 1999
Clouded leopard	Neofelis nebulosa	Joributi forest and up, Gairibans and below
Common Indian Leopard	Panthers pardus	Latpanchor (Anon, 1996)
Tiger	Panthera tigris	East, Nar, West Nar, Thosum (Biswas et al., 1999)...
Snow leopard	Panthera uncia	-
Elephant	Elephas maximus indicus	In Mahananda Wildlife Sanctuary upto Latpanchor (Bist per comm)
Wild boar	Sus scrofa	-
Barking deer	Mintiacus muntjac vanginalis	Neora national Park (Biswas et al., 1999) Singhalila National Park (Pradhan, 1998)
Sambar	Cervus unicolor niger	Mahananda W. Sanctuary (Anon, 1996)
Indian bison	Bos gaurus	Thusum (Biswas et al., 1999), Golaghat (Anon, 1996)
Serow	Capricornis sumatransis	Singhhalila National Park (Pradhan 1998)
Himalayan Thar	Hermitragus jemlahicus	Rechila, Jorpokhari and triangular poing (Biswas et al., 1999)
Goral	Nemorhaedus goral hodgsoni	Rechila
Rufous tailed Hare	Lepus nigricollis ruficaudatus	Tonglu (Ghose, 1980)
Moupin hare	Ochotana thibetana sikimaria	Sandakphu (Khajuria, 1958 & Ghose, 1974)
Hairy footed flying squirrel	Belomys pearsoni pearsoni	
Lesser Giant flying squirrel	Petauris elegans caniceps	Ghoombhanjyang (1974), Phalut, Singhalila Range (Biswas, 1952), Tonglu, (Ghose, 1975)
Hodson's Giant flying squirrel	Petaurista magnificus hodgosoni	Ghoombhanjyang (Ghose, 1975)
Gray's Giant flying squirrel	Petaurista n. nobilis	Ghoombhanjyang (ghose, 1974), Selimbong (Ghose, 1977)
Himalayan striped squirrel	Tamiops m. macclellandi	Gopaldhara (baptista, 1915), Palmajua, Slimbong (Ghose, 1977)
Orange bellied Himalayan	Dremomys l. lokriah	Palmajua (Khajuria, 1958), Selimbong

squirrel		(Ghose, 1974, 1977, 1980), Damdama danda, Thosum Rechila (Biswas et al. 1999)
Malayan Giant squirrel	Raufata bicolor gigantea	Narbong, Sivok, Rungbee (Crump, 1915), Tarkhola (Khajuria, 1958), Bhandarjora (Anon, 1996), Joributi (Biswas et al., 1999)
Crestless Himalayan porcupine	Hystrix h. hodgsoni	-
Millard's rat or Large toothed rat	Dacnomys m. millard	-
House rat	Mus brunneusculus	-
House rat	Rattus rattus tistae	Kalimpong, Nimbong, Peshok, Pedong, Sangsser (Baptista, 1916, 1918), Narbong (Crump, 1915)
Himalayan rat	Rattus n. nittidus	Batasia, Ghoom, Sukhiapokhari (Crump, 1915) Ghoombhanjyang (Ghose, 1974)
White bellied rat	Niviventer niviventer	
Chestnut rat	Niviventer f. fulvescens	
Little himalayan rat	Niviventer eha eha	Palmajua, sandakphu
House mouse	Mus musculus humourus	Kalimpong, Narbong, Peshok, Pedong, Sandakphu, Sukhiapokhri, Takdha, Tarkhola
Sikkim vole	Mus pahari	Peshok, takdha
Indian bush rat	Golunda e. ellioti	Kurseong (Annandale,)
Lesser brandicoot rat	Bandicota bengalensis	Kalimpong, Nimbong, Peshok
Sikkim vole	Pitimys sikimensis	
Gangetic dolphin	Platanista gangetica	Teesta River

Distribution of some Avifaunal species recorded from Darjeeling District

Species	Latin name	Distribution	Status/Remarks
Birds of Prey: Order Accipritidae (Hawks, Vulture etc.)			
Indian Shikra	Accipitei badius dussumeieri	Selimbong, Sumsing	
North India crested Goshawk	A. trivirgates indicus	Selimbong	
Asiatic sparrow hawk	A.nisus nisisinillis	Mungpoo	
Indian sparrow hawk	A. nisus melaschistos	Mungpoo, Tomsong	
East Himalayan Besra Sparrow-Hawk	Accipiter vigratus affinis	Mungpoo (Inglis, 1931), Ranima (Inglis, 1932) Selimbong (Ghosh, 1977)	
Eastern Tawny eagle	Aquila rapan nipalensis	Darjeeling Distirct	No localities
Griffon vulture	Gypus fulvus		
Peninsular crested serpant eagle	Spilornis cheela melanotis	Samsing (Choudhury, 1980)	
Indian Black crested Baza	Baza l. leuphites	Nagri, Glenburn, Toomsoong, (Inglis, 1040)	Sparingly distributed
Bith's or the Northern Brown Baza	Baza jerdoni jerdoni	Longview, Sukna, Kurseong Dowhill, Mungpoo (Inglis, 1940)	Rare (Inglis, 1940)
Boneli's Hawk eagle	Nisaetus fasciatus	Rhenok, Rishet (Mukhpadhya et al., 1999)	
Buzzard	Buteo sp.	Rechila	
Himalayan Redbreasted	Microhieran c. caerulescus	Teesta (Mukherjee,	

Falconett		1963)	
Order Phasinidae: (Pheasants, Partridges and Qualis)			
Rufous throated Hill Partridge	Arborophial r. rufogularis	Darjeeling	
Grey Partridge	Francolinus pondicerianus	Punding (Anon, 1996)	Uncommon
Sikkim Blood Pheasant	Ithiaginis cruentus	Sandakphu (Khaling 1997)	
Black backed Kaleej Pheasant	Lophurus leucomelana melanota	Rajma (Inglis, 1927), Gairibans, Gorkhey, Rammam (Khaling, 1997), Joributi, Alubari (Mukhapadya et al., 1999)	
Satyr trapopan	Tragopan satyra	Garibans, Kaiyakatta, Kalipokhari, Bikhebhanjyang (Khaling, 1998), Throughout Neora valley National park, (mukhapadhaya et al., 1999)	
Family bucerotidae: Hornbills			
Eastern largeyellow naped woodpecker	Picus flavinucha	Shunabhati (Chowdhury, ghose, 1985), (Samsing, Chowhdury, 1980)	
Darjeeling Pied woodpecker	Picoides d. darjellensis	Gairibans, Kalipokhari, Joributi area (Mukhapadhya, 1999)	
Himalayas Crimson breasted Woodpecker	Picoides c. cathparius	Rechilla	Darjeeling District
East Himalayan Grecreowed pygmy woodpeckery	Picoides canicapillus semicoronatus	Gish River (Mukherjee)	
Eastern Larger Goldennbacked Woodpecker	Chrysocolaptes lucidus guttarcistatus	Gorubathan (Biswas, 1950), Mukherjee (1955), Chowdhury (1980)	
Stirgidae: Owls			
Spotted Scops Owl	Otus spilocephalus	Alubari, Joributi, Mungpoo, Sureil, Nunlal	
Collared pygmy owlet	Glaucidium brodiei	Rechila, Reshok, Mungpoo	
Himalayan Owl	Strix aluco	Joributi	
Burmese Collared Scops Owl	Otus Bakkammoena	Kalijhora (Das, 1979), Thurbo T.E.	
Family: Muscicapidae			
Brown Parrot bill	Paradox orinos unicolor	Gairiban and lower altitudes of Singhalila National Park (Khaling, 1998)	
Fulvous fronted parrot bill	P. fulvifrons		
Wetland birds of Mahananda Wildlife Sanctuary (Anon, 1996)			
Pond Heron	Ardeola grayi	Golghat	

Night Heron	Nycitcoran nycticoran	Sukna	
Large Erget	Ardea alba	Sukna	
White necked stork	Cicoma episcous	Saltick	Uncommon
Lesser Adjuant Stork	Leptoptilos javanicus	Golaghat	Uncommon
Black Stork	Ciconia nigra	Sukna	Uncommon
Openbill Stork	Anatomus oscitaus	Sukna	Uncommon
Black Ibises	Pseudibis papilosa	Sukna	Uncommon
Pintail	Annas acuta	Teesta Barrage	
Common teal	Nettapia coromandelianus	Sukna	
Coot	Fulica atra	Banderjhora	

Amphiblan fauna recorded from Darjeeling District

Scientific Name	Distribution
Megophyrus parva	Darjeeling (Daneil, 1963), Chanda (1989)
Bufo melanosticus	Kalimpong, Darjeeling (Chanda, 1986)
Rana cyanophlyctis	Darjeeling (Chanda, 1986)
Rana gerbillus	Mirik, Darjeeling, (Chanda, 1986)
Rana limnocharis	Mirik, Darjeeling, Kalimpong (Chanda, 1986)
Rana livida	Kalimpong, Darjeeling (Chanda, 1986)
Rana macrodon	Not known in Darjeeling (only recorded from Sikkim)
Rana senchalensis	Senchel Lake (Chanda, 1986)
Rhacophorus leucomystax	Mirik, Kalimpong (Chanda, 1986), Upper Jalapahar area, Senchel Lake (Roy, per comm)
Rhacophorus reinwardtii	Kalimpong, Darjeeling (Chanda, 1986)
Bufo himalayensis	Not above 4000 ft (Roy, per comm)
Philatus annandeli	Darjeeling (Roy, per comm)
Other anurans	Darjeeling
Megophyrus major	
Rana annandeli	
Rana assemensis	
Rana gammiei	
Rana monticola	
Uperodon globulosus	Mahananda Wildlife Sanctuary (Anon, 1996)
Rana verrucosa	
Rana rythrea	
Polypedates leucomystax	
Bufo melaonstictus	
Rana tigerina	
Tylotiton verucossus	Jorepokhari, Pachang (Dasgupta, per.comm)

Moths, Butterflies from Darjeeling District. The following list and information on moths and butterflies have been collected from papers of Sevastopulo (1935) and few unpublished records of an amature naturalist Subrat Tamang

Species	Locality
Moth	
Agrius convolvuli convolvuli	Darjeeling, Peshok, Tigerhill
Acronita lachesis	Peshok, Darjeeeling Tigerhill
A. styx styx	Darjeeling, Peshok, Tigerhill
Meganoton analis	Mungpoo, Darjeeling
M. rufescens rufcens	Majitar, Mungpoo, Peshok
Apocalypsis velox	Peshok
Pentateucha curiosa	Tigerhill
Amplyterus panopus panopus	Darjeeling, Mungpoo, Peshok, Tigerhill
Ambulyx sericeipennis	Tigerhill
Ambulyx liturata	Mungpoo, Tigerhill
Clanis titan	Darjeeling
Langia zenzeroides zenzeroides	Darjeeling
Rhdoprasina floralis	Darjeeling, Tigerhill

Daphnis nerii	Darjeeling, Peshok, Tigerhill
D. hypothous	Darjeeling, Peshok, Tigerhill
Ampelophaga rubiginosa	Darjeeling, Tigerhill
A. dolichoides	Darjeeling
Theretra alecto	Darjeeling, Tigerhill
Ambulyx sericeipennis	Mungpoo, Darjeeling
Attacus atlas	Mungpoo, Peshok
Samia canningii	Mungpoo, Peshok, Darjeeling
Actias maenas	Darjeeling
A. selene	Darjeeling, Tigerhill
Antheraea assemensis	Darjeeling, Peshok, Tigerhill
A. frithi	Darjeeling, Peshok, Tigerhill
Leopa miranda	Mungpoo, Majitar
L. sikkima	Darjeeling, Peshok, Tigerhill
Caligul thibeta	Darjeeling, Peshok, Tigerhill
C. grotei	Mungpoo, Majitar
C. anna	Tigerhill
Salassa lola	Darjeeling, Peshok, Tigerhill
Brahmaea hearseyi	Peshok, Tigerhill
Spilosoma tamangi	Tigerhill
S. adumbrata	Tigerhill
Pericallia montronula	Tigerhill
Ammotrata festiva	Tigerhill
Diaphora mediea	Darjeeling, Tigerhill
Coscinia cribaria	Tigerhill
Lymantria dispar	Darjeeling, Peshok
Orgyia recens	Tigerhill
Acontia lucida	Darjeeling, Tigerhill
Autograpaha gamma	Darjeeling, Peshok, Tigerhill
Caepteryx graminis	Darjeeling, Peshok, Tigerhill
Butterflies	
Papilo machaon	Majitar and banks of river Balasan
P. hospiton	Majitar and banks of R. Balasan, below Ging tea estate
Iphiclides popdalirius	Hills of Manebhanjyang, Meghma
Apollo parnassius	Tonglu, Meghma, Sandakphu
Apollo parnassius apollo	Simana, Tonglu, Meghma
Tenopalpus imperialis	Simana, Tonglu, Meghma, Tigerhill, third Mile
Archillides krishna	Manebhanjyang, Srikhola
A. aecturus	Lebong, Third mile, Tiger hill, Manebhanjyang, Darjeeling
Aporia crataegi	Majitar, Darjeling, Tigerhill
Species found in Majitar, Balasan River, Tiger hill, Darjeeling, Sandakphu, Meghma, Tonglu, Manebhanjyang, Hill sides of Sonada	
Pieris rapae	Nymphalis polychoros
P. brassica	Nymphalis var album
P. uperi	Cynthia lardui
Pontila daplidice	C. album
P. laltidice	Pandariania pandora
Arthocaris cardaminos	Boloria napaea
Elphinstonia charlonia penia	Clossiana euphorsyne
Colias australis	Melitae linxia
Genopteryx rhamani	Mellieta par theonides
Zeptidea morsei	Neohipparehia fatura
Plebciula darylas	Pseudo chayara
Aptura ilia	Eriebia manto
Limentis camilla	Aphantopus hyperantus

Forestry

Before dealing with the topic Forestry itself it becomes essential to look at the history of Forestry and the Forest legislation of West Bengal and Darjeeling in particular, because in the light of these only will one be able to understand the prevailing scenario of Forests.

Prior to the coming of the British in India, the Forests were managed by the people according to their customs and traditions, where the relationship between the Forests and the people were harmonious. But with the coming of the British the whole relationship was put into jeopardy, because the British looked upon Forests as valuable good-goods which needed protection and proper distribution. The implication was that there existed a conflict between the people and the forests and that the conflict had to be managed. And in accordance to this they passed forest laws. The first forest law was passed in 1865. The coming of the British had a profound affect on the lives and especially to the forest because the British cleared up large amounts of Forests to set up tea gardens and railway lines. And even today the landuse pattern is indicative of the British system, which they left behind.

At the time of their acquisition by the British, the Darjeeling hill areas (then called British Sikkim) were largely uninhabited and covered with forests. Forest to the east of the Tista were found to be in relatively poor condition due to the greater degree of rural settlement there by the indigenous Lepcha people who followed swidden (shifting) agricultural practices. Extensive forest fires were often reported in the outer hills and along the Tista and Rangit valleys which often originated in the uncontrolled spread of 'slash and burn' fires. The British notificiation of reservation of forests in the Darjeeling Division under the first Indian Forest Act of 1865 arose out of the need for conservation of timber and also to eliminate the prevalent practice of swidden agriculture. By virute of a gazzeted notification in 1871-72, 186,48 sq.km (72 sq. mi) of hill forests were notified as Reserve Forests, and 1986.52 sq.km (767 sq.mi) of primary *sal (Shorea robusta)* forests in the ceded Bhutan Duars were notified as Open Government Forests.

The Darjeeling and Jalpaiguri Forest Divisions, comprising of areas of 274.54 sq. km (106 sq. mi.) and 334.11 sq. km. (129 sq. mi.), respectively, were constituted under Dr. W. Schilch who took over as Conservator of Forests in 1872-73. An inspection tour of the Singalila forest extending upto 12000 ft. was made by Gamble, who suggested the retention of natural forests there for stabilisation of climate, water sources and to prevent landslips from occurring on the high-degree slopes. Addition of the Apalchand Reserves to Jalpaiguri Division and reservation of nine forest blocks to the present Kalimpong Division over 1875-77 expanded the areas of the Darjeeling and Jalpaiguri Divisions to 4166.99 sq. km (161 sq. mi.) and 1010.10 sq. km. (390 sq. mi.) respectively. The Indian Forests Act (1927) subsequently designated a part of the forest areas as protected forests. Since 1879, the areas notified under forests have remained more or less stable, although marginal additions took place under the Estate Acuistion Act (1953) and transfers of *khasmahal* forests and surplus forests on tea-leased lands. **Under the British and for some time after their departure, the primary official purpose for working forests in the two Northern Divisions was the production of timber for railway sleepers, which averaged over 2000 tons annually between 1874-1960.**

Since Indian forestry was a relatively new institution at the time of its inception under Brandis in 1864, the initial methods of working the forests involved the sale of inidvidual trees exceeding a specified girth under the permit system. **The impact of the system was decimation of all the best species and consequent accumulation of defective or otherwise poor quality species and specimens in production forest areas, quite the antithesis of sound silvicultural** (growing and tending of trees as a branch of forestry) **practice. Exploitation of the Darjeeling Forests commenced in 1884 primarily to supply railway timbers and to meet the fuelwood needs of the tea labour.**

With the establishment of sounder forest management under recommendations of Brandis in 1878 as later modified by Schilch, the working practice in hill forests gradually changed over to selective felling at altitudes above 7500 ft. and mostly clear-felling below these levels. **Mooculture gradually entered as the practical solution for improvement of commercial forest quality, and spelt the doom of broadleaf stands in many naturally forested areas.** (a clear example of monoculture is *Cryptomeria Japonica* found in the Darjeeling Hill Areas, it is a Japanese species, a fast growing softwood, grown/planted for the purpose of timber/commercial use only and does not come into the use of the community. The disadvantages of monoculture is that it does not allow the growth of other flora and fauna, hence disturbing the ecology. It promotes soil erosion and does not conserve water.)The principles of 'economic' forest management evolved since Independence were to provide forest-based industry with forest resources as inputs and to develop forestry support for the rural economy. A major change in forestry practice in the Darjeeling hill areas as compared to the colonial period was its reorientation towards production forestry aimed at maximistion of revenues.

The low ratio of forest cover in West Bengal to burgeoning timber and fuelwood demands in the state sparked off another major reversal of British forestry practices in the high altitude forests by opening them for production forestry through West Bengal Forest Development Corporation [W.B.F.D.C.] which had been established for the purpose under the S.S. Ray ministry on 2 November 1974, and to which an area of 832 sq. km. Of forests was transferred on Government lease from the Darjeeling and Kalimpong Forest Divisions. The intention behind the transfer was to bring around 4500 ha of high-altitude forest reserves under a 30-year production cycle primarily to serve the needs of wood-based industry in West Bengal which then faced an estimated shortfall of between 39-48 thousand cum. The principles to

be followed were those of commerical forestry, with the corporation also being charged with reforestation/afforestation of production areas and other wastelands. **Because of the higher commercial offtake envisaged, the focus now shifted form hardwood to softwood extraction. A consequence of the shortening of the production cycle from 50-60 years for timber harwood species like teaks and sal to 30 years for quick growing softwood species like eucalyptus to serve the needs of plywood and matchwood industries was a restocking of production forest areas with non-endemic tree species.** (See 'monoculture' preceding paragraph) Another factor in deforestation resulting from the expanded working of hill forests was consistent failure to meet replantation and reforestation targets, as evinced in several annual reviews on the Darjeeling Hill Areas Annual Plans in the Seventies and Eighties, with shortfalls ranging from 50-75 percent of targets. The usual plea for such poor performance was the financial constraint on implementing a large-scale replantation programme following accelerated felling, because of high establishment and operation costs governing the working of the corporation. (*Man and Forests in the Darjeeling Himalaya: Reviewing Settlement-Fuelwood Equations-Sachari Roy Mukherjee*; HIMALAYAN PARYAVARAN vol.5)

The Darjeeling Himalayas comprises of the three hill sub-divisions of Darjeeling district-namely Darjeeling, Kurseong, Kalimpong with Siliguri as the fourth sub-division which is the *terai* or the plains. Darjeeling district falls under the North Bengal zone with a total geographical area of 2417.3 sq km.

Darjeeling Himalayas has a forest cover of 38%, 18% is under tea cultivation, and 2% under cinchona. The rest i.e. 42% of the land is called the *Khasmahal* areas, which is the area left for the use of the people. This set-up i.e. the landuse pattern plays an important role in the concept of Forest Management, because the major portion of the land is alloted to Tea and Forest have left little space for the expansion/settlement of the people.

The forest areas of Darjeeling hill are under different adminsistrative authorities and they are:

1.Forest Directorate	268.00 sq km
2.West Bengal Forest Development Corporation	457.38 sq km
3. Wildlife Divisions	332.70 sq km
4. Darjeeling Gorkha Hill Council	69.50 sq km

Though the Darjeeling hills almost entirely come under the "autonomous" Darjeeling Gorkha Hill Council, the administrative and management control of forest, cinchona and tea gardens is still outside the body's purview.

Classification of Forests

Protected-117.52 sq. km (Protected forests are National Parks and Wild Life Sanctuaries)
Reserved-4.24 sq.km (Reserved forests are those forests other than Wild Life Sanctuaries and National Parks).
Unclassified – 91.03 sq.km (Unclassified forests are resumed forests. Leased area in Norht Bengal which was reviewed and unutilized lands, generally with trees were resumed and handed over to the Forest Department for management).
Forest under D.G.H.C. (Darjeeling Gorkha Hill Council)-70 sq.km (D.G.H.C. forests are generally those forests which were handed over to the D.G.H.C.by the West Bengal Forest Department).

Darjeeling Forest Division
(Hisory, Location and Jurisdiction)

Darjeeling Forest Division was constituted into separate Forest Division under the title of Darjeeling Forest Division in 1878. The Division, which had a recorded area of Reserved Forest of 72,650. The Division, which had a recorded area of Reserved Forest of 72,650.00 acres (as per Vol-1 of 10th Working Plan of the Division for the period 1967-68 ot 1967-77), has since undergone many changes as far as the Forest Administration is concerned. The Division was brought under the control of West Bengal Forest Development Corporation Ltd. W.e.f. 2.11.74 and remained under its control till 30.11.92. During this period the Division was bifurcated into Darjeeling (Spl) Division and Darjeeling (General) Research and Planning Division w.e.f. 26.75. These two Divisions were again amalgamated into Darjeeling Forest Division w.e.f. 16.8.86 which was finally reverted back to Directorate of Forest on 1.12.92. prior to the reversion from West Bengal Forest Development Corporation Ltd. The areas under Singalila Range (now Rimbick Range) were transferred to Wild life Division-1 in the form of Singhalila National Park w.e.f. 31.5.92 in pursuance of the Government Order No. 3201-For-11M-33/19/-1, dt. 9.4.92.

The Division is mostly situated within Sadar Sub-Division of the Darjeeling District and only a small portion in the Tista Valley in Kalimpong Sub-Division of the Darjeeling District. It is situated within 87°59' and 88°28' east longitude and 26°56' and 27°4' North altitude and bounded by the Tista River and Kalimpong Division to the East, the State of Sikkim to the North, the state of Nepal to the West and forests of Wildlife Division-I to the South.

The Headquarters of the Division is at Barakakjhora, Darjeeling, the District Headquarter is located at an elevation of 6820 ft.

The forest extends from an elevation of about 600' at Riyang in the Tista Valley to nearly 12,000 ft. elevation near Sandakphu & Phalut. The northern slopes of the tracts are drained by Ramam, the Great Rangit an the Little Rangit all tributaries of the Tista River, while on the Southern slope, the important river are the Mahanadi and the Balasan. Besides these the tract is intersected by numerous rapid hill terrain forming deep valleys. Many streams again break, the terrain forming tributaries to the main current. The forest thus form watershed of numerous streams and rivers either in part or whole.

Over a period of time many areas of this Division have been handed over to various agencies (see classification of forests and administrative authorities)

Forest- Type, Composition and Legal Status

The forest extends from an altitude of 600' feet to about 12,000 ft. and as a result a number of physiographic, climatic, biotic and aquatic factors are met with. Consequently as a result of these factors a variety of types and sub-types of forest are met with.

A. **RIVERIAN FOREST**

These exists in very small patches in the bed of the Great Rangit river in the Tista Valley Range and corresponds to Champion's seral type 1s-2 of tropical Dry evergreen forest. The main species found are Siris (Albizzia sps.) and Dadbage (Garuga pinnata). The undergrowth consists of herbaceous annuals, shrubs and grasses, the commonest species being Assamlata *(Eupatorium Odoratum)* and *Saccharum spontaneum.* These Forest are generally free from climbers but occasionally *acacia pinnata, Milletia auriculata* and *Mucuna pruriens* are met with.

B. **LOWER HILL FOREST.**

These occupy the Tista and Rangit valleys where several sub-types are often found intimately mixed and merging gradually into one another. The distribution of the species in these forest is extremely complicated owing to the great variation in the soil, aspect and rainfall. One characteristic feature is the presence of Choya bans (Dendrocalamus hamiltonii) in this area. Three main sub types are described below:-

3. Sal Forest:- These corresponds more or less to Champion's sub type 3b/C2/DJ(a)- wet hill sal of Northern tropical moist deciduous Forest. Sal is confined to the ridges, spurs and on the southern aspect in the Tista and Great Rangit valleys. Sal reaches higher altitude on the Southernly aspect than on the Northerly ones. Except on the ridges, spurs and well drained flat lands, sal occurs as isolated trees, and those found on the pocke of the valleys are best in quality. Its principal associates are Chilane *(Schima Wallichii)*, , Bahera *(Terminalia belerica)*, Pakasaj *(Terminalia ceremulata)*, Parari *(Stereospermum chelonoides)* with small percentage of Maina *(Tetrameles nudiflora)*, Sidha *(Largerstromia parviflora)* and odal *(Sterculia villosa)*. In Badamtam block Sal is found growing gregariously alongwith Chirpine *(Pinus longlolia)* is found to form pure crop. In the Sal forests the undergrowhts are sparse and mainly consists of Amlisa *(Thysanoldena agrostis)*, *Coffea bengalensis, Assamlata along with Choya bans (Dhendrocalamus hamiltonii).*

2. Dry Mixed Forests:- These forests are mainly decidious and found on the drier ridges, spurs and slopes. The composition of the crop corresponds to Champion's type 3b/E6 Himalayan Mois Deciduous forest of Northern Tropical Moist Deciduous Group. The species found in this Sub-Type are numerous and intimately mixed and the most common and important ones are enumerated below. Common species found are *Moina (Testrameles nudiflora), Chiple Kowla (Machilus gammieana), Odal (Sterculia vilosa), Pakasaj (Terminalia crenulata), Parari (Streospermum chelonoides), Siris (albizzia spp.), Dabdabe (Garuga pinnata), Phaledo (Erythrina indica), Simal (Salmalia malabarica), and Malata (Macaranga spp.). A small quantity of mandane (Acrocarpus fraxinifolius), Lampate (Duabanga sonneratioides), Gokul (Alianthus grandis), Chikrasi (Chukrasia tabularis), Gamari (Gmelina arborea),* are also met with. The undergrowth mainly consists of *Amlisa (Thysanoldena agrostis), Assamlota (Eupatorium odoratum), Tarika (Pandanus furcatus), Kamle (Boehmeria spp.), Tagar (Tabernemontana coronaria) and Choya bans (Dependrocalamus hamiltonii).* This type of forests is mainly represented in Badamtam Blocks.

3. Wet Mixed Forests:- These occurs in the sheltered pockets in the valleys along *jhoras* and are semi-evergreen in character. The composition of the forests corresponds to Champions type 3b.2S-4-East Sub Himalayan Wet Mixed Forest of Northern Tropical Moist Deciduous group. These forests are characterised by the presence of *Panisaj (Terminalia myriocarpa), Lahasune (Amora rohituka), Lali (Amoora wallchii), Champ (Michelia champaca), Tarsing (Beilschmiedia spp.),* the undergrowth are dense, often from inpenetratable thickets and mainly consist of Bepari *(Ostodes paniculatus), Choya (Densrocalamus hamiltonii), Hatisara (Alpina mutas), Kamle (Bojemeria spp.)* an another herbaceous annuals and shrubs. There are considerable areas in Sombong and Peshok block where *Choya Bans (Debricakanys hamiltonii)* occurs almost pure with a few scattered trees, e.g. *Gamar (Gmelina arborea), Chilanne (Schima wallichii)* and *Pakasaj (Termilia creulata).*

Climbers are numerous and form inpenetratble masses in the Wet Mixed forests and the commonest ones are *Acacia pinnata, Milettia auriculata, Mucuma pruriens Spatholobus roxiburghii and Tinospora cordifoia.*

C. MIDDLE HILL FORESTS (3,000' feet to 5,000' feet):

These forests are not well represented in these Division because much of the forests within these altitudinal range have been given over to the Tea Estates or for cultivation purpose in the past. This type of forests is met within the upper portion of Sombong and Reyang blocks and a typical represented in Sim Block. The composition of the crop is more or less similar to Champion;s type 7b/C1-Bengal Sub-tropical hill forest of Northern Sub-tropical Wet Hill Group. The forest is a fine semi-evergreen type with tree of good height and diameter. The crop consists of *Chilanne (Schima wallichii), Mauwa (Englhardtia spicata), Musre katus (Castanopsis triboloides), Dalne katus (Castanopsis indica), Saur (Betula cylindrostachys),* along with *Tarsing (Beilschmiedia spp.), Anagre (Phoebe atemata),* at lower altitude. At higher altitude the species like *Lekh chilanne (Nyssa sessiliflora), Utish (Machilus adulis), and Tite Champ (Alichimentra cathcartii),* are found. The under storey consists of *Jiingini (Eurya japonica), Kharane (Symplocos theifolia), Bepari*

(Ostodes peniculatus) and Malata (Macarange spp.) and the undergrowthss are *Strobilenthis spp. Stiinu (Girardinia spp.), Bohemeroa spp. and ferns.*

D. UPPER HILL FORESTS (5,000' ft to 8,000' ft)

The forest zone is the most important in this Division as it occupies the bulk of the forest areas of this Division. The composition of the crop vary within the increase in altitude and variation in aspect and rainfall and also confirm, with biotic and edaphic factors. The most conspicuous trees of these zone are *Oaks, Laurels, Magnolias, Alders, Maples, Birches, and Bucklandia.* The composition of the crop more or less corresponds to Champion's type 10b/C1-East Himalayan Wet Temperate forest of Northern Wet Temperate crop. Three altitudinal zones may be distinguished characterised by the predominance of Lauraceae, Qurcus lamelosa and Quercus pachyphylla respectively occupying very roughly the zones of 6,000 feet respectively though they very often over lap each other with variation on topography and exposure.

In the lower most region the important species found are *Katus (Castonopsis indica), Lekh dabdabe (Meliosma wallichii), Phaledo (Eythrina indica), Lepcha kawlo (Machilus edulis), Mustre katus (Castanopsis tribuloides), Mauwa (Engetharadtis spicata), Pipli (Buckland populnea), Lekh chilanne (Nyssa sessiliflora), Walnut (Juglanus regia)* with an under storey of *Jhingni (Eurya japonica), Kharane (Sumplocos theifolia), Malata (Macardanga spp.), Hovenia dulcis and Arupate (Purnus nepalensis),* A good number of *Pipli (Bucklandia populnea).* Trees, some of them reaching about 12 feet girth, and *Utis* trees are found in lower portion of Selinbong block. A good number of well shaped and big sized trees like *Musre Katus (Castanopsis indica),* particularly in Kankibong-10, *Natural Pipli (Bucklandia populnea) and Walnut (Juglans regia),* are also noticeable in little Rangit block. Walnuts are also found in Lopchu block and big trees of *Podocarpus nerifolia,* although not healthy, are noticeable in Lopchu block.

In the zone between 7,000 feet to 8,000 feet, Oaks occupy the top canopy. Among the constituent species are *buk (Quercus lamellosa), Phalant (Quercus lineata), Kapasi (Acer campbellii), Katus (Castanopsis hystrix), Lali kawla (Machilus odaratisima), Champ (Michelia excelsa),* with an under-storey of *litsaea elongata, Khanakpa (Evodoa spp.), Jhongmu (Eurya japonica), Kharane (Symplocos theifolia),* this type of forest are well represented in Kankibong, Selimbong North Rimbick, South Rimbick.

Buk (Quercus lamellosa), and Phalant (Quercus lineata), attain huge dimensions although some of them may be defective due to overmaturity. *Maling bamboo (Arundinaria maling)* starts appearing as undergrowth in this zone along with *Kimbu (Strobilanthes spp.), Aselu (Rubas spp), Asare (Vibrnum erubescens), Kagote (Daphne cannabina),* ferns and other herbaceous annuals.

In the zone between 8,000 feet to 9,000 feet *Sungur katus (Quercus pachyphylla)* is found in good proportion along with *Oaks,* viz. *Buk, (Quercus lamellosa), Phalant (Quercus lineata) and Arkawal (Quercus fernestratea).* In addition to *Oaks, Lali kawla (Machilus odaratissima), Kapasi (Acer campbellii), Musre katus (Castanopsis tribuloides), Ghoge champ (Magnolia campbellii), Lekh dabdabe (Meliosma wallichii)* with a quantity of *champ (Michelia excelsa)* are also noticeable, the species in the understorey are *Cinnamom obtusfolium, Pieris ovaligolia, Acer hookeri and Nessa javonica.* The undergrowth mainly noticeable are *Kimbo (Stroblianthes spp.), Asare (Viburn erubescens), Kagate (Daphne cannabina), Plygonum spp. Kapasi (Acer campbelii)* gets its best expression near about an altitude of 8,000 feet in Kankibong block where there are magnificent specimens of this species. In Tonglu block another species e.g. *Tenga (Sorbus cuspidata)* begin to appear above 8,000 feet. *Yew (Taxus baccata)* appears in Kankibong block but they are found mainly scattered and are in malformed and sickly state. *Hemlock (Tsuga brimpmoana)* are noticeable within this zone on the ridges in South Rimbick and Ramam blocks. *Sungure Katus (Quercus pachphylla) and Hemlock (Tsuga brunoniana)* also extend into other type of forest mentioned below.

E. OAK-HEMLOCK FORESTS (8,000' feet to 10,000' feet):

This type of forests is met with an upper portion of Singhalila Range and correspond to Champion's type 11/cl © – Eastern Oak-Hemlock forest of Himalayan Moist Temperate Group. The forests consists of mainly *Sungure Katus (Quercus pachphylla), Bhujpat (Betula utilis), Tenga, Musre katus (Castonopsis tribuloides)* and *Rhododendron spp.* With groups of *Hemlock (Tsuga brunoniana)* appearing on the higher ridges. The middle storey is composed of *Pahenle (Litseae elongata), Siltimur (Lindera neesiana)* etc. The *Hemlock (Tsuga brononiana)* gradually gives way to *Silver fir (Avies densa)* at the higher altitude of the wet temperate forests. There is a very dense undergrowth of *Arundinaria aristrata,, Arundinaria racemosa* along with *Kagote (Damphne cannabinas), Berberis aristata and piptanthus nepalensis.*

Hemlock is found mostly on the ridges and good specimens of this species are noticeable all along the ridge from Ramam to Saberkum. Here it forms practically *puire croop* extending upto 10,000 feet. This area contains rather over mature stems of *Hemlock (Tsuga brunoniana)* some of which are in decaying condition. Elsewhere it is found in Siri Saberkum, Phalut and Ramam Blocks but its distribution is rater sparse. Regeneration of hemlock is absent due to grazing and as a result of bamboo undergrowth.

Silver fir (Abies densa) trees starts growing from about 9,500 feet elevation and its higher limit may extend upto 12,000 feet. It forms more or less pure crop on spurs and ridges and elsewhere it is mixed up with *Hemlock (Tsuga brunoniana), Rhododendrons and Birch (Betula alnoides).* In its lower limit *Silver fir (Abies densa)* is generally mixed up with *Hemlock (Tsuga brunoniana).* Various species of *Rhododendrons spp. viz. R. Grande, R. barbatum, R.*

arboreum, along with *Rato nigalo (Arunddinaria aristata)* are present. This forest type more or less corresponds to Champion's type 11/c3© – Eastern Oak-Fir Forests of Himalayan Moist Temperate Forests.

In these areas fire swept over large areas in the past and as a result *Silver fir (Abies densa)* and several trees have been exterminated causing opening in the tree canopy. As a result pure bamboo brakes, consisting of one or more species of *Arundinaria*, viz. *A. aristata and A.racemosa* results with practically no tree growth, thus a secondary succession results and Champion recorded this as a serial; type and called it Temperate Bamboo Brakes under Himalayan Moist Temperate Group –11/2s/4.

F. **ALPINE FOREST (10,000' feet to 12,000' feet):**

In the lower areas *Silver fir (Abies densa)* is found in moderate quantity with its associates e.g. *Birch (Betula utilis)*. Broad-leaved tree species is mostly absent excepting *scattered* ***birch (Betula spp.)*** and *Leak katus (Corlus ferox)*. In places the areas is blank or covered with evergreen forest sometime so dense as to be difficult to penetrate. This type of forest corresponds more or less to Champion type 3/C2-*Birch Rhododendron* forest. Various species of *Rhododendron* are present but the most important ones are *Rhododendron arboreum, R.campanulatum, R.barbatum, R.cinnabarunum, R.hofhdoni, R.grande, R.falconeri, R.campanualatu* is often found in pure crop in patches above 11,500 feet. *Silver fir (Abies densa)* in crooked form extends right upto 12,000 feet and a few *Lekh dhupi (Juniperus pseudosabina)* are noticed in Sandakphu and Shri blocks. Accidental fires have caused many areas to become blank in these forests and they are either bare or covered with *Arundinaria aristata or A.racemosa*. The undergrowth is sparse and mostly consists of *Barveris aristata, Raasa sericea, Gaultheria griffithiana* and *Cononester spp.*

Source: Darjeeling Forest Division; Annual Forest Divison, 1998-99

Forest Depletion in the Darjeeling Himalayas:

Source: Growing Dilemmas: Fuel &Fodder Access Rights in the Himalaya, Sanchari Roy Muhkherjee &Govinda Chowdhury, Darjeeling Himalayan Paryavaranm

The forests of Darjeeling district have been administered under the Darjeeling, Kalimpong and Kurseong Forest Division ever since the turn of the century. Of these, the first two are entirelly hill divisions, while the third includes the substantial belt of reserved forests that still survives along the terai. Tea cultivation in the district is confined almost entirely to lands transferred on lease from the Darjeeling and Kurseong divisons, indicating that substantial felling activity has occurred there in the past. Most surviving forests in these two divisions are converted forests growing conifers at temperate elevations, and teak and sal in the terai.

Classified Forests in the Darjeeling Himalaya *(including Leased Lands)* 1901-1991

	Forest Area Darjeeling Division (sq.km)	Forest Area Kalimpong Division (sq.km.)	Forest Area Kurseong Division (sq.km.)	Total Forest over all Divisions (sq.km.)
1901	469	611	474	155.17
1911	461	611	482	1553.98
1921	422	609	451	1481.31
1931	399	614	414	1427.23
1941	391	609	414	1414.05
1951	404	612	414	1430.34
1961	409	609	414	1432.65
1971	406	607	414	1427.65
1981	389	598	404	1391.34
1991	380	586	399	1364.95

Source: Extracted from District Census Data for Darjeeling District, various years.

The table 'Classified Forest in the Darjeeling Himalaya' reveals long-term changes in classified forest cover which have occurred in Darjeeling district. The most substantive change over this extended time-horizon is seen to have taken place between 1911-1931, with leasing of considerable tracts of forest land to the tea gardens, particularly after IFA 1927 (Indian Forest Act), became law, being accompanied by parallel extension of Khasmahal settlement. Among the three forest division in the district, hill forests in Kalimpong have however consistently accounted for higher forest cover, a feature attributable mainly to the absence of tea gardens in that region. Although all forest divisions show

decline in forest cover over the century, the fall has been much sharper in the Darjeeling and Kurseong divisions and moderate in the Kalimpong division. Substantial loss of forests in the district between 1911-1931 was followed in fact, by marginal recovery of forest cover between 1941-1961, attesting to largescale forest conversion activity during that period. Lands which had been cleared of mixed forests over earlier period were converted both to tea and to monoculture of coppice sal and teak in commercial forests. The deforestation trends over the first half of the century thus appear to have been shaped primarily by the revenue motive. While forests in the region were being clearfelled almost continuously as a result, the losses in classified forest cover represent land transfers outside commercial forestry and tea, i.e. to direct revenue use. The brief recovery between 1961-71 was followed by another downtrend in forest cover in all three forest division between 1971-1991. It is however interesting to note that classified forest cover in Kurseong division was stationery for nearly five decades beginning 1931 and only after 1971 commenced another decline that appears to be related the growth of urban settlement in the terai, particularly in Siliguri.

It should be remembered however that the existence of classified forest cover in the land settlement records in itself does not vouchsafe the preservation of forest canopy over an equivalent area. Satellite imageries, for instance, show broad swathes of listed forestland which are now covered by open forest and scrub. Conversely, numerous small patches comprising both orchards and khasmahal forests dot the areas which are under revenue settlement, particularly where agriculture is the mainstay of the hill population. The micro features of this situation should therefore be assessed in this light.

The Table 'Changing Natural Forest Cover in the Darjeeling Hills (excluding Municipal Areas) 1981-1991 presents a breakdown of cnsus figures on decadal changes in the forest-to-population relationship over different police-station [PS] areas in the hill region of Darjeeling district. This region comprises the three hill subdivisions of Darjeeling, Kalimpong and Kurseong, with constituent areas as under. However, the municipal areas under Darjeeling, Kalimpong and Kurseong townships have deliberately been excluded so that attention can be focused on the extent of rural population dependence on local forests. Inclusion of town populations in the table would severely distort this assessment.

Two other points of caution need to be observed in the interpretation of areal forest figures in the table . firstly, the tables 'Classified Forest in the Darjeeling Himalaya' and 'Changing Natural Forest Cover in the Darjeeling Hills' are strictly not comparable because the plains forests of Kurseong forest division which come under the Siliguri administrative subdivision are excluded from the latter table. Secondly, forest cover as reported in the table 'Changing Natural Forest Cover in the Darjeeling Hills' excludes other forms of vegetative cover such as tea, etc. and therefore provides much better indication of the actual state of forests in the region. However, the village-wise forest figures which have been aggregated into the table 'Changing Natural Forest Cover in the Darjeeling Hills' are not aloway consistent between censuses, because of partial lacunae in the reporting process. In several block forests in Kalimpong subdivision for instance the 1981 Census reports 100 per cent forest cover over the entire block; on the other hand, figures in 1991 Census greatly reduce forest figures in these areas to indicate only partial cover. Despite such difficulties, much better idea of the locational spread of forests and deforestation in association with the recent growth of population may be gained from the breakdown figures in this table.

Population density in the Darjeeling Hill areas stood at 281 persons per sq.km in 1991, having grown by an

Changing Natural Forest Cover in the Darjeeling Hills (excluding Municipal area) 1981-1991

Rural IPS Areas	Land Area sq.km.	1991 Population	1981-91 Population increment	1991 Population density	1981-91 Density increment	1991 Forests sq.km.	1981 Forests sq.km	1981-91 Change sq.km.	1991 %Forest Cover	1981 % Forest Cover	1981-91% (+/-) Change
DARJELING SD											
Sukhiapokhari	67.15	34943	5968	520	89	9.4	11.1	-1.62	14.06	16.48	-2.42
Pulbazar	310.29	57833	13087	186	42	115.2	184.6	-29.33	50.02	59.48	-9.45
Darjeeling	117.99	132425	28054	1127	239	5.2	10.8	-5.57	4.90	10.11	-5.21
Rangli-Rangliot	272.99	65342	14117	239	52	52.6	52.7	-0.03	19.28	19.29	-0.01
Jorebungalow	153.76	57369	5340	373	35	44.7	45.3	-0.6	29.07	29.46	-0.39
KALIMPONG SD											
Kalimpong I	610.4	143884	25336	236	42	83.5	2.9.4	-125.95	23.16	58.10	-34.94
Kalimpong II	224.1	25983	5390	116	0	33.2	101.8	-68.68	13.74	42.21	-28.47
Gorubathan	218.61	20399	802	93	0	177.9	178.2	-0.36	40.25	40.33	-0.08
KURSEONG SD											
Kurseong	361.27	23735	23735	292	66	114.6	114.6	2.41	34.61	33.89	0.71
Mirik	100.48	11603	11603	408	115	18.7	18.7	4.86	25.10	19.93	5.17
TOTAL HILL REGION	2436.6	684818.0	133431.6	281	55	927.2	927.2	-224.87	29.42	38.84	-9.42

Source: District Census Handbooks, Darjeeling District, 1981 & 1991: Primary Census Abstracts

average 55 persons per sq.km between 1981-1991. The breakdown of the density increment however shows considerable

variation over PS areas. Among relatively settled areas, the sharpest increments having occurred in Darjeeling and Mirik, both located in predominantly tea-growing regions where rapid urbanisation is also taking place. Population and density increments in Kalimpong II and Gorubathan, both relatively unsettled areas, have on the other hand been negligible. The table therefore indicates deepening polarisation in the settlement profile between eastern and western parts of the district.

The Table 'Classified Forest in the Darjeeling Himalaya' had noted earlier that the preceding decline of classified forest cover between 1971-91 had maximum areal impact on Darjeeling and Kalimpong forest division. Buffer forest areas have traditionally recorded a higher presence at the eastern and western extremities of the district because of altitudinal factors and the proximity of international borders. Pulbazar and Kalimpong I have accordingly shown forest cover, verging on 60 percent till 1981. Kalimpong II and Gorubathan, also under extensive forest cover uptil then, are both alos located in the relatively less populated east of the district. On the other hand, the Darjeeling PS area with one of the highest concentrations of population in the Himalaya had nearly inconsequential forest cover of just over 10 percent in 1981. Forest cover was also relatively low in other tea-dominated areas such as Mirik, Sukhiapokhri and Rangli Rangliot. The most alarming feature brought out by the table is the sharp reduction in forest cover that has occurred over most hill areas in just one decade following 1981, Gorubathan and Kurseong providing the only exceptions. While the decline of forest in the Pulbazar and Darjeeling PS areas h as been around 19 percent and 5 percent respectively, the fall is far more precipitous in the Kalimpong I&II areas, even after adjusting for possible lacunae in reporting forest areas in the 1981 Census.

Comparison of forest cover to increments in population over PS areas during the decade 1981-91 draws attention to the population-forest dynamics of the Darjeeling Himalaya. Intercensal growth of population has been highest in Darjeeling, Kalimpong I and Kurseong PS areas of the region. Darjeeling PS however has witnessed the highest incremental population growth of 28054 persons over the smallest land area leading to the highest degree of settlement concentration. This has raised non-municipal population density in 1991 to 1127 persons per sq.km, and with this proliferation of settlement, forest cover has also been halved, as evident from the table. Kurseong, with third-highest intercensal population growth of 23735 persons in 1981-1991, shows much lower non-municipal settlement density of 292 persons per sq.km because of its larger land area. Intercensal growth in density has therefore been 66 persons per sq.km., but since settlement is concentrated by the presence of tea and the area was relatively less settled to begin with, forest cover has in fact been augmented between the census. A sharp contrast is seen however in case of Kalimpong I. Here the intercensal increase in population by 25336 persons over the decade has taken place over a much more dispersed area, and the density increment on non-municipal population density or 236 persons per sq.km in 1981 has been by 42 persons per sq.km. It should however be noted that, in the absence of tea, this population increase has to be absorbed by Khasmahal settlement, leading to a very high rate of forest depletion. Deforestation at these high rates has also been responsible for the recent recurrence of landslide in the area.

Source: Growing Dilemmas: Fuel &Fodder Access Rights in the Himalaya,
Sanchari Roy Muhkherjee &Govinda Chowdhury,
Darjeeling Himalayan Paryavaranm,Vol 6

Forestry and Joint Forest Management

The Darjeeling Himalayas with a different climatic, biotic and aquatic conditions is different from the rest of West Bengal and is considered a part of the Eastern Himalayas. Eastern Himalayas being one of the tea Global Biodiversity Hotspots in the world. Biodiversity Hotspots are areas rich in density and diversity of Biological species. Floristically, the total number of angioisperms is 8000 species out of the total 1700 species found in India whereas the land area of Eastern Himalayas is only 12% of that of India. Out of the 8000 species, 3200 are endemic. About 800 species of birds are also found in the region (Banerjee A.K. 2000). In the light of these facts and figures the study into the working of JFM (Joint Forest Management) in the hills assumes significance and its effectiveness in protection and conservation the biodiversity of the region.

The origin of JFM can be traced to Anabari a small forest location in Midnapore District (West Bengal). During the early 1970's, this placce saw the forest and its resources completely eliminated by illegal felling and vandalism. People started to feel the pinch due to the loss of forest covers on which their livelihood had so far existed. The Divisional forest officer A.K. Banerjee mentioning the gravity of the situation experimented with the socio-economic forestry project which gradually evolved to Joint Forest Management. JFM brings the State Forest Department and village communities together in the protection development and management of the Forest, in particular degraded forest. In turn both parties share the responsibilities and benefits in the endeavour.

JOINT FOREST MANAGEMENT IN THE DARJELING DIVISION

JFM in the Darjeeling Division was launched in 1992 the government of West Bengal issued the resolution for the formation of FPC in D.G.H.C. vide GO no 8555 dated 15 November 1991. Initially 10 FPCs (Forest Protection Committees) were registered in three Ranges of the Division followed by formation of 17 Committees also in the Darjeeling Division.

Here the backdrop of the situation of the forests and the Forest Department needs mention when the decision for reversion of the Division was taken in 1992; the situation was serious with thefts and destruction of the forests rampant and unabated. As a first step to bring things under control massive raids were conducted. According to the then DFO, S. Dhaundyal such actions were taken with the aim to bring down the scale of illegal felling in the areas under Darjeeling Division and also to raise the sagging morale of the Forest Department so that the writ of law might be re established in matters relating to management of forests.

Regular workshops and training programmes were also organised to enthuse the Forest Department personnel about the new concept of participatory management of forests. With this backdrop, the first seeds of JFM were sown in the hills of the Darjeeling Division.

DARJELING RANGE

Darjeeling Range is one of the 8 ranges of the Darjeeling Forest Division which is headed by a Divisional Forest Officer. The Range is in the change of a Range Officer, and the RO is the overall administrator of his respective Range. The Range Officer is also the link between the higher authorities viz. DFO, CCF and the FPC. 3nos Beat Officer (a Beat is the lowest unit of management). The Beat Officer is to report to the Range Officer. The Beat Officer is also the secretary of the Forest Protection Committee concerned. 3 Forest Guards and 9 Ban Sharmik comprises of Darjeeling Range the Forest Guards are required to do patrolling in the forest to detect and stop illlicit activities in the forest. Further they also do supervision works in the field while plantation and other forestry related works are carried out. Since they are trained workers they are supposed to share their experience in the field with other daily wage workers. Ban Shramiks are workers in the FD like the Forest Guards and they undertake works relating to protection like partrolling, plantation supervision and also work as *malis* in the nursery.

The Range Office has a radio transmitter for communication with the Division Office and has a well-stocked nursery employing modern technique. A firewood sale centre is also located at the Range office. An impressive medicinal nursery and a Shrubberry Park are also located near the Range Office. The Darjeeling Range Office is located at the trijunction of Ghoom Bhanjyang, Sukhiapokhri, Bijanbari road.

The other Ranges under Darjeeling Forest Divison are:

1. Rimbick Range
2. Dhotray Range
3. Tonglu Range
4. Ghoom Simina Range
5. Tukdah Range
6. Teesta Valley Range
7. Bardaman Range

The jusrisdiction of Darjeeling Range is over an area of 1230.82 ha. The temperature ranges from 15 degrees centigrade to 11 degrees centigrade during the summers and 10 degrees centigrade to –2 degrees centigrade during winters. The altitude variation of Darjeeling Range varies from 1666.6mts to 2181.81mts. Bhanjyang blcok is divided into 5 compartments for the purpose of management. The Darjeeling Range comprises of 3 blocks which are:

- Risihat Block (area 373.05 Ha)
- Chatai Dhura Block (area 313. 95 Ha)
- Bhanjyang Block (area 543.82 Ha)

The total area of Darjeeling Range beign 1230.82 Ha

There are 8 FPCs (Forest Protection Committees) under Darjeeling Range and they are

1. Bhanjyang FPC
2. Lama Minga FPC
3. Pubong Khasmal FPC
4. Pussimbong FPC
5. Risihat FPC
6. Batasia FPC
7. Barbotay FPC
8. Ghoom Bhangyang FPC

GUIDELINES FOR WORKING OF FPC IN THE D.G.H.C. AREAS

The following are the main text of the guidelines which have been distributed to the FPCs in the Darjeeling Gorkah Hill Council region. This has been translated to Nepali and the GO no. is 8555 dated 15/11/91.

Structure: -

i. People living in areas close t forests and those sharing a common boundary with the forests shall be eligible to form the FPCs with the permission of the DFO concerned.

ii. Generally the FPCs will consist of people form the economically backward classes as members and beneficiaries but people also having interest in protection and conservation of forests and women folk belonging to families near the forest may become members of the FPCs.

iii. If a husband acquires the membership of the FPC, his spouse automatically becomes a member and can exercise the voting rights and other functions of a member.

iv. Councillors of the DGHC shall provide necessary help and support for the healthy functioning of the FPCs in their respective areas.

v. Each FPC shall form an executive body for execution of responsibilities and tasks bestowed upon the FPC.

vi. Formation of the executive body shall be as follows:

- Member area councillor of DGHC/
- Number of the executive body members shall not exceed 6 in numbers.
- Number of ordinary members of the FPC and in each meeting the executive committee memebers shall nominate a chairperson for the same.

vii. The constitution of the FPC shall be constituted by the executive members of that FPC in consultation with the area councillor of the DGHC and will have to be passed by the DFO concerned.

viii. The RO shall supervise the workings of the FPC in his respective range.

ix. In case of any addition/ alteration that is found necessary in the function of the FPC the executive body shall recommend for such change to the DFO concerned.

x. The BO in his capacity as the secretary of the FPC shall call meetings of the executive body and the general body of the FPC as and when required keeping in accordance with the constitution.

xi. The duties and works regarding plantation of trees and the necessary arrangements shall be in accordance with the various prohibitions imposed form time to time which is done keeping in mind the welfare of the wildlife.

Functions: -

i. A register containing all the details of the members of the FPC like names, addresses, age, number of family has toe be maintained by the committee. The details form of the FPC members passed by the FD has to be attached to a similar register and the same be submitted to the office of the Range Officer concerned.

ii. The President of the FPC shall be the main signatory to the minutes and reports of the AGM which has to be maintained for record. The secretary is BO shall maintain and send such minutes and records to the office of the RO concerned.

iii. An AGM shall be held where members for the executive body shall be elected and matters relating to FPC shall be discussed and decided.

Duties:-

i. To conserve the flora and fauna of the forest.

ii. To protect the flora and fauna of the forest.

iii. To inform the personnel or officials of the FD of any illegal activities or of people trying to cause harm to the people of the wildlife intentionally or unintentionally.

iv. To safeguard the forest from fire,, encroachment, cattle grazing, theft, and tresspassing by others.

v. To help FD personnel in arresting any persons found indulging in the above mentioned activities.

vi. To complete all forest related welfare activities taken up by the FPC properly and in time.

vii. To involve all the fellow members of the FPC in the works of protection and conservation of the forests an wildlife.

viii. To help FD personnel in choosing and employing right people in forest welfare activities.

ix. To help FD personnel in disbursement of revenue generated from the sale of timber equally among the FPC members.

x. To stop any violation of the amended Indian Forest Act, 1927 and the Indian Wildlife Act, 1972.

xi. To inform the RO./BO of any illegal activities which causes harm to the forest and the wildlife by any members of the FPC, for which his/her membership is liable cancellation.

xii. To help the FD personnel in enforcement of the Indian Forest Act 1927 and the Indian Wildlife Act 1972 amongst the FPC members also who indulge in violation of these acts.

Benefits: -

To be eligible for any benefits the FPC will have to render at least 5 years of protection works to the forest and wildlife.

The members shall without causing any damage to the seedlings and trees be given the permission to access of the following free of cost:

i. Collection of dead and dying twigs and branches, grass/ fodder, fruits, leaves, and mushroom but permission to collect medicinal plants by the members of the FPCs situated in North Bengal will be restricted to non protected

ii. Removal of trees while thinning takes place and when carrying out works of new plantations, 25% of the income generated from the sale of such poles shall go to the FPC members. However poles other than Teak whose girth at breast height are less than 90 cms shall be considered. For Teak poles those with girth of 60 cms shall be considered.

iii. The income from the sale of big trees shall however not be shared. But the 25% of the income generated form the sale of such poles shall go to the FPC members. However poles than Teak whose girth at breast height are less than 90 cms shall be considered. For Teak poles with girth of 60 cms shall be considered.

iv. Seeds of trees collected in year shall be deposited with the West Bengal Scheduled Tribes Welfare Co operative Ltd. through LAMPS where it exists. The income shall be disbursed through such bodies to the members.

v. Where the above mentioned works and responsibilities have been fulfilled by the FPC the concerned forest officer shall disburse a share of the revenue generated to all the eligible members.

Dissolution of FPC/Cancellation of Membership/ Appeals etc.

i. The power to dissolve the executive body of the FPC and to cancel individual membership shall be vested with the DFO if the member violates the Indian Forest Act 1927 or the Indian Wildlife Act 1972 according to the clause 2&3.
ii. The concerned DFO may on the recommendation of the Range Offcier dissolve the FPC.
iii. The executive body of the FPC may be based on the above mentioned clause approach the RO/BO/DFO for cancellation of the membership of an individual.
iv. Any appeal against the legal actions of the RO/DO which goes agianst the workings of the FPC may be appealed to the DFO concerned.
v. Any legal actions taken by the DFO and any appeal against such actions may be initiated through the area councillor of the DGHC to the CCF and the decision of the CCF shall be final and binding.

FPCs and EDCs in the Darjeeling Himalayas

Zone	**Number of FPCs/ EDCs**	**Area Protected (Ha)**
1 North Bengal		
D..G.H.C.	116	45974
Terai	241	105977
2Agri Zone	**Soil**	**Cropping Pattern**
Hills	Gneiss, Schists, Highly acidic	12% under Agri 10% Irrigated 60% holdings upto 1Ha Cropping intensity 110%

EDCs or Eco Developmentr committee are formed for participatory management in protected areas. Here members of each EDC are to be selected by the DFO concerned. EDC members shall normally be people living in the vicinity of the Sanctuary (protected areas) with provision for joint membership from each household. Like the FPCs and EDC is to have an executive committee to carry out the various acitvities given to the committee.

Of late the realisation of threats to the ecology and environment of the region has emerged awareness and concern has begun to gather importance and the attention of scholars, researchers, activist and policy makers alike.

Some of the major problems related to the Darjeeling Himalayas may be mentioned as follows:

(a) Deforestation
(b) Loss of Biodiversity
(c) Higher rate of erosion of the fertile topsoil leading to increasing decline in agri productivity and production.
(d) Destruction of natural eco system due to expansion of agriculture and other kinds of human activities.
(e) Uncontrolled use of chemical fertilisers and pesticides in Agriculture especially Tea leading to pollution and poisoning of the soil and water system.
(f) Poverty and a slow growth
(g) Population growth beyond the carrying capacity and sustaining capacity of the area.
(h) Exploitation of Forest resources by the population of the Tea Gardens especially fire wood collection and hunting.
(i) Unregulated tourism in the area.

Source: JointForest Management in the hills.
A case study of Ghoom Bhanjyang FPC.2/12/2000
By: - Mr. Raju Dayan Lama,
W.W.F., Project Serve, Darjeeling.

N.B.: - it is worth mentioning here that an indepth research needs to be done on the workings of the JFM in the hills as a whole to assess whether it has worked in the Darjeeling Context. Therefore the critique that follows has been taken from the work of Mr. Raju Dayan Lama (A case study of Ghoom Bhanjyang FPC). Although focused on a section/a small area this will in someway outline the pros and cons of JFM in the Darjeeling Hills.

ANALYSIS OF FINDINGS (OPINION OF THE RESEARCHER)

Going by the resolution for formation of Forest Protection Committee in the DGHC areas which goes into details of structures, functions, and duties of the Forest Protection Committee its comparison to the salient features of the larger JFM schemes. It is found that the benefit of planting trees of fuel, fodder as well as shrubs, legumes, and grasses does not find mention in the resolution for the DGHC areas. The benefits of peoples participation to village communitiesj alone finds mention in both cases, however the limitation of benefits to the people and not to commercial or other interests has not been mentioned clearly in the resolution of the West Bengal Forest Department.

While other features mentioned in the resolution of the West Bengal Forest Department for formation of FPCs in the DGHC areas, more or less fits ito the larger JFM.

An important feature mentioned in the structure of the FPC resolution is the inclusion of the area councilor of the DGHC as a member of the executive body. Although it looks good in paper but the practical difficulties of having the area councilor in the Annual General Meetings and other meetings of the FPC has to be considered. The Bhanjyang FPC was formed in 1994, but on asking the President, Vice President and the members of the executive body the opportunity of the FPC body sitting with their area councilor has never materialized so far.

Further any limit on the numbers of executive body members has been mentioned but any reservations for women in this body does not find place wheras numerous articles and annual reports of the forest department mentions the emphasis it gives to womens representation and participation in such bodies. But one of the most controversial and disbalancing feature of the resolution is the nomination of the Beat Officer as the secretary of the FPC. Where it has been clearly mentioned that the secretary shall bne the one who shall be responsible for calling the AGMs and other meetings.

The nomination of the BO completely disbalances the scales and tilts it in favour of the forest department, as most of the powers are vested with the secretary. Most of the FPC members resent this arrangement. The position of the BO as a secretary is pivotal and it seems more of that of a watchdog. Another drawback of this arrangement is that it robs the pople of popular participation and places them at the mercy of the Beat Officer/Range Officer concerned. Thus the whole notion of participatory forest management is defeated by this arrangement.

The RO is mentioned to supervise the workings of the FPC in his respective range and the BO is also given the charge of the secretary. But during the course of the study it was found that the RO practically plays no role as such and the FPC and BO interact more with each other than with any other officials of the FD.

With regard to functionaries of the FPC the holding of the AGM and other meetings regularly but in the case of Ghoom Bhanjyang FPC no AGM has been held so far since its formation in 1994 for reasons unknown and on further query the members responded by saying that they have decided to call and AGM this year to bring about change in the present structure and posts of the FPC. However, the members seemed to be ignorant of the fact that the AGMs and other such meetings has to be called by the BO in his capacity as the secretary fo the FPC. Again due to this arrangement of the BO as the secretary it has not been possible to exercise this important function of holding meetings and other important matters relating to the functioning of the FPC and other important matters relating to the functioning of the FPC and other important matters could be discussed. Hence the members of the Ghoom Bhanjyang FPC are further pushed into ignorance and where the members and the forest could have gained by arousing their interest and participation through stimulating discussions. The people and the concept of JFM suffer as a result.

As far as duties of the FPC members thy have undertaken several measures towards conservation and protection of the forest of Bhanjyang block.

1. Patrolling: the members of the FPC regularly undertake patrolling duties in the forest (Bhanjyang Block) with the participation of the officials and staff of the Darjeeling range to detectj and stop any illegal activities by forest offenders.
2. Stop Grazing: all the households of Ghoom Bhanjyang FPC owning cows and other livestock practice small feeding and no household allow the animals to graze in the forest.
3. Restoration of the forest works of afforestation: the majority of the members of the Ghoom Bhanjyang FPC engage themselves on plantation works thus earning daily wage in the process. Out of an area 69.49 ha allotted to them a total of 49 ha has already been cleaned of weeds and planted with seedlings. Another 20 ha remains to be cleaned of weeds and be planted with seedlings.
4. Soil conservation works: the members of the Ghoom Bhanjyang FPC have also undertaken works of soil conservation in Bhanjyang block. Recently an area approximately 1 ha has been subjected to soil conservation works by doing brush wood pallicading and shrub planting with the support of an NGO based in Darjeeling, Project SERVE.W.W.F.-INDIA.

Although according to the resolution for the FPC members to eligible for any benefits the FPC members will have to render 5 years of protection works to the forests and the wild life. Since it was formed in the year 1994 the members are not eligible for any benefits however the Forest Department seems to have been rather flexible in this case and some schemes like fishery, knitting have been granted to the FPC. Permission to collect dead and dying twigs and branches, grass/fodder, fruits, leaves and mushroom is given to the members of the Ghoom Bhanjyang FPC for their own use. But the biggest irony of this resolution is with regard to the FPC members receiving 25% share from the total income generated from the sale of the poles when thinning operations are carried out. The researcher has doubts as to whether most of the present members of the Ghoom Bhanjyang FPC would live to see this day due to the fact that the growth of trees at this elevatio and under the conditions is painfully slow and it would take atleast 30-35 years before such operations could beceome a psossibility.

The mention of dissolution of the FPC and cancellation of individual membership and any appeal against such decisions of the DFO (Divisional Forest Officer) of the Range Officer/Beat Officer is the stick which the Forest Department officials weild against the FPC. Thus the resolution has a character of a carrot and stick. Where the carrot is the access to forest and usufructory benefits and the stick is the power to cancel individual membership and dissoluton of the FPC. Although there is a clause for appeal against such measures but it has also been mentioned that ultimately the

decision of the Chief Conservator of Forest is final and binding. Thus going by the relolution the researcher believes that the whole resolution is tilted in favour of the FD with the FPC and its members virtually at the mercy of the FD personnel. The researcher has doubts whether the FD has any belier in the people in general and the FPC in particular about its commitment towards the conservation and protection of the forests and wildlife. It is this suspicious attitude that is reflected in the resolution No. 8555 dated 15/11/94 for constitution of the FPCs in the DGHC areas. Although this resolution is supposed to be the guidelines to the FPCs it is more of a document with less of guidelines and more of do's and don't's.

Where the broader JFM speaks of empowerment of the forest users and womenfolk, resolutions and arrangements of such character certainly does not help in bringing about a change in the traditional forest management system where forest user groups were disadvantaged against the FD but instead of empowerment it further robs the people of their dignity and self respect. Moreover due to the ignorance and the levels of illiteracy of the Ghoom Bhanjyang FPC mere handouts of such booklets cannot teach the people about the capacity as the secretary is supposed to work witht the FPC members and help in the dissemination of information he is still looked upon as the provider of employment, schemes and above all as a powerful figure. It is this position and influence which the Beat Officer and Road Officer wields in their respective beat and range and which they fear will lose if JFM is implemented sincerely and the people are empowered. Unless the FPCs and the FD change the present status quo and become equal partners in the conservation and protection of the forest JFM will not be able to achieve what it can for the people and the forest.

The positive aspect of the JFM and FPC in Bhanjyang blcok is the attachment that has emerged between the people and the plantations. Since most of the Ghoom Bhanjyang FPC members participate in the plantation works as daily wage earners they seem not to cause any damage to the seedlings planted by them while collecting forewood and fodder in the forest.

Of the 27 households that consists of Ghoom Bhanjyang FPC the entire households use firewood as a major source of fuel which is a non commercial source. Although there exists a firewood sale depot in the Darjeeling range office where firewood is sold @ Rs. 1.00 per kilo. But the firewood sale depot does very little business except when there are funerals in the areas and a dead body has to be cremated.

The bulk of the people of this particular hamlet and Ghoom Bhanjyang are poverty striken and it is simply inpossible for them to afford any sources of fuel which are commercial in nature. Although kerosene and some saw dust is used as fuel kerosene is used mainly to start a fire in the chula of light kerosene lamps and saw dust is used to lessen the burden of firewood collection which is becoming scarcer by the day. Hence their dependence on firewood as a major source of fuel which is collected both from the forest on a larger scale and their private lands in similar quantities.

Another feature according to the information on monthly income of the 27 households it appears that the majority of the households have a respectable income by rural standards however the bulk of the money which comes from the sale of milk is again ploughed back in the form of buying fodder and cattle feed. If the amount earned from the sale of mild were to be deducted the incomes of most of the households would consist of amount earned by working as a labour which would be Rs. 975-Rs. 1050 approx taking th official rate ofr Rs. 65/- per day and availability of work for 15-17 days in a month.

It must be mentioned tht in the process of the findings of this study it was found that dairying is not a profitable activity in the area.

Input:

Pina 2 kg @ Rs. 8 = Rs 16.00

Maize cattle feed ½ kg @Rs. 7 = Rs.3.50

Salt 250 grams @ Rs. 3 =Rs.0.75

Output:

An average cow gives 5 kg milk which is sold @Rs.8 per kg, therefore when one takes into account of the input and the output of the activity it assumest the character of an unprofitable business.

Total Input comes to Rs. 20.25 in the form of cattle feed.

Rs.40 has been taken as daily wage, which goes into gathering of fodder, and firewood, cleaning cow sheds and so forth, the total comes to Rs. 60.25

However the output is only Rs. 40.

Inspite of this shortfall people continue with this activity and one of the factors is due to the cowdung manure which they require for their agricultural fields.

Fuelwood Demand

Out of 2355 sq km of Darjeeling Hill areas, the total area of the forest is 1058.08 sq.km (41.41%). Whereas the forest area under the D.G.H.C. is 69.50 sq km which is (2.9%) of the total geographical are of the hill council.

In 1951 the total population of the Darjeeling District was 4.47 lakh and the areas being 3149 sq.km, the natural resources like water, timber, firewood, fodder, etc available at that time seem adequate. Complete forest cover would b observed not only in reserved forest area but they could be prominently seen even in Government khasmal land, tea gardens and other private lands. With increase in 1951 population by almost 3 times in 1991 the pressure of the population on natural resources was tremendous.

There are 3.31 lakhs population (1991 Census) in and around forest areas in the three sub-division of Darjeeling. On the Southern border of the Kalimpong Forest Division, a population of 95,000 reside in 18 tea gardens and two villages which come under the Jalpaiguri distirct. Similarly in 6 tea gardens and 26 Khasmal villages of Siliguri Mahakuma, situated on the fringes of the forest of Wildlife Division and Kurseong Forest division, a total population of 33,459 is directly dependant on forests. Thus the total population from within and outside the hill areas dependant on forest are 4,59,555 deducting 50% and 33% of the tea estate and khasmal villages respectiveley now depend on tea pruned waste and agricultural waste.

The requirement of fuel wood for the population as calculated on the basis of per capita consumption according to wood balance study of West Bengal 1987 comes to 4,59,555 x 1.385 m3=6,22,623, m3 obtainable from annual felling of 1,245 ha (each hectare producing 500m3 of firewood). Out of 6.23 lakh m3 annual demand for firewood the forest directorate produces annually 25,000m3 obtainable from 50 ha of clear felled area. Thus the balance which works out to be 1195 ha of forest is plundered annually for firewood.

During the first decate of 1901-1910 the Forest Department used to produce 82,000m3 of firewood per year for the district giving 0.32m3 per capita firewood available. During 1931-1940, the firewood production was 90,000 m3 with .26m3 per capita firewood, while during 1951-1960 the firewood production was 84,000m3. But due to increase in population the per capita fire wood available was 0.16m3 only. Also most villages and tea gardens had their own land with forest which supplied their requirement of firewood. During 1981-1990 however, the firewood production though remained almost same in previous decade at 86.000m3, with the corresponding risk in population the per capita fire wood dropped down to .073.

Fuel and Energy needs

The scenario of Darjeeling with respect to Fuel and energy needs is quite acute in the Darjeeling hills as because 70 % of the rural population is still dependant on firewood for their energy need (Roy Chowdhury 1996). This is one of the factor leading to deforestation and has lead to serious fallouts which is being experienced in land slides, water shortage, micro-climatic changes, loss of bio-diversity and even destruction and even destruction of crops of wild animals.

The problem of dependency on firewood is further compounded by the amount required per family which is almost double of that of the plains district. A study of forest department in 1984 showed that the annual consumption of firewood per family in the Darjeeling District was 1.03 cum whereas it is 0.519 cum in Jalpaiguri and 0.364 cum in Cooch Behar (neighbouring plains districts of WestBengal). Based on this report the hill sub-divisions of the district consumes 1.03* 70% of 99758=71925.52 cum of firewood annually. This figure is questionable and the estimation of it is that each family consumes a minimum of 10 cum per annum. This does not include the small wood timber which is quite substantial. With this figure the hill sub-division of the district consumesw 10* 70% of 99.758 =698306 cum of firewood annually. This is the least firewood consumption that is extracted legally or illegally from the existing green cover and does not include the timber consumption. The higher consumption of firewood of Darjeeling could be attributed to the use of firewood not only for cooking, but also to heat homes and for animal husbandry. A large source of firewood is used by the tea garden workers.

The people in the *Khasmahal* areas extract firewood from their own land and from the forest. But, in the tea gardens this is not so. Under the Plantation Labour Act 1951 and West Bengal State Rules 1956 it is mandatory that the management supply firewood to the permanent workers only. Prior to the West Bengal Estate Acquistion Act 9153 every tea garden had their own private forest from whre part of the firewood and small wood requirement of the garden was met. Today this system is no longer prevalent and the private forest has been converted to unclassified forest. The tea garden (permanent and casual workers) depend solely on the nearby forests for their firewood and small wood needs.

All these factors are putting a tremendous pressure on the forest resources of Darjeeling and needs immediate attention. The extraction of firewood is something that can be minimised with proper manamagement if proper alternatives are provided. It is also a crucial issue which needs to be addressed immediately. The ever increasing population requires firewood and unless alternatives are though of and provided the green cover depletion by firewood extraction will increasingly continue leading to serious fallouts some of which the people are already experiencing.

It is worth noting here that some of the people in the rural areas do not even own or use kerosene stoves, which indicates that they have to depend solely on firewood as a source of fuel/energy.

Source: Letter submitted to the
Governor of West Bengal,
Shri Viren J. Shah,
Dated 27-05-2000,
by the Darjeeling N.G.O. Network.

Timber Demand

The annual average timber production during which 1970 was approximately 1.43 lakh m3 which in 1980's came down to 1.25 lakh m3. Against this during 1991-2000 the annual timber production by the four sub-division was a mere 12,500 m3 only 10% of which was in 1980's the total ban of felling of trees following the 1996 Supreme court

order. There is practically no legal felling even to meet peoples genuine requiremenrt of timber. However, this has encouraged timber smuggling resulting in quite extensive degradation of forest.

Even as the farmers had raised agro-forestry in their agricultural land, the requirement of the landless had to be met from forests. They even collected timber and firewood for selling in the market for their sustenance. This is seen to be a major factor for the degradation of forests.

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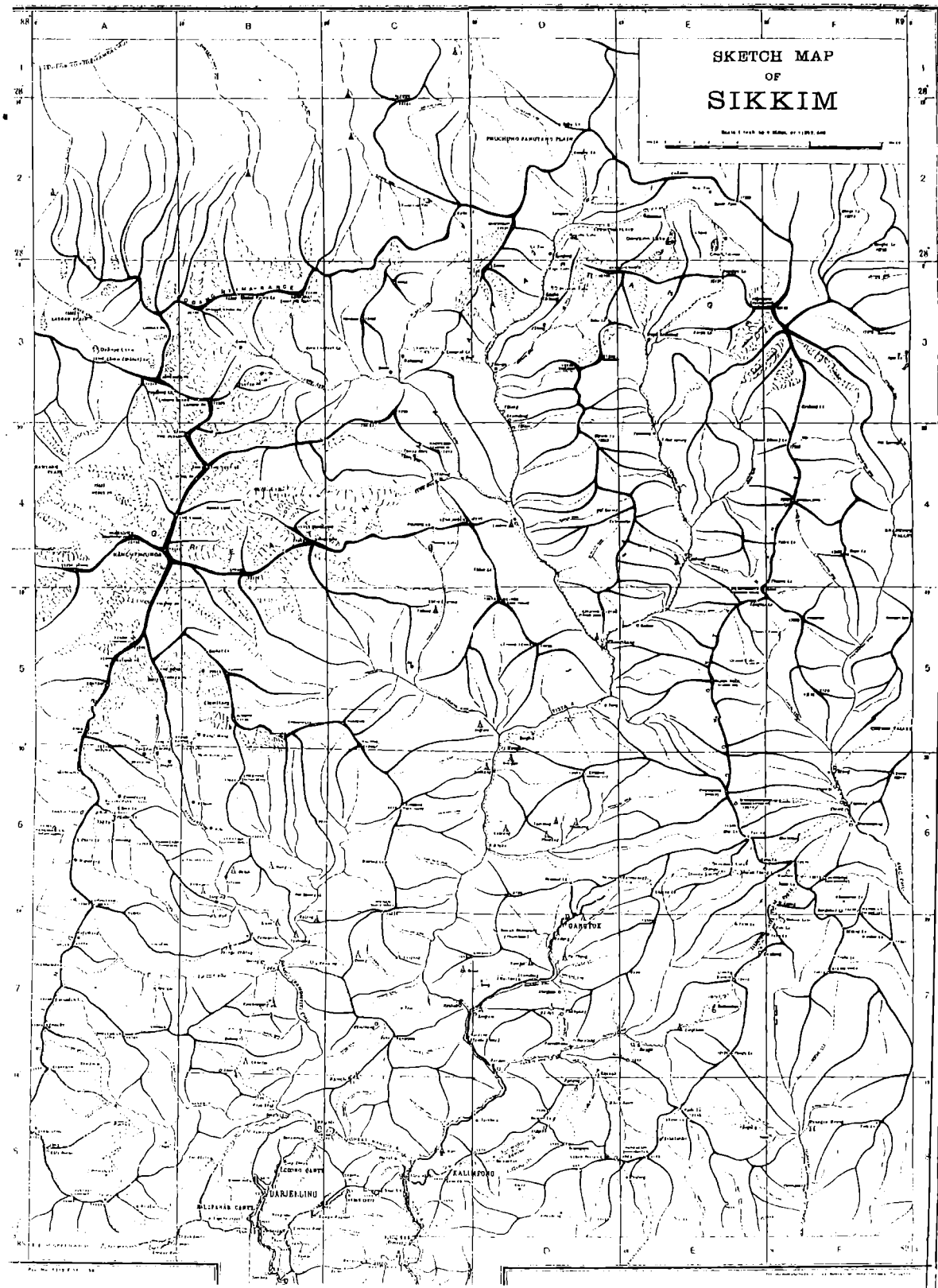
SKETCH MAP
OF
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INTRODUCTION

Wedged between the kingdoms of Nepal in the west and Bhutan in the east lies a small stretch a rugged land just 115 kilometres by 65 kilometres the Indian state of Sikkim.On its northern border towers the plateau of Tibet whereas it shares its southern border with West Bengal. On the world map it lies at an approximate latitude of 27 degrees North and longitude of 58 degrees East.

It has an area of 7096 sq km and surrounded by three countries, Sikkim has a 220 km long border with Tiber,100 km with Nepal, 30 km with Bhutan and 80 km with West Bengal.

PHYSICAL FEATURES

Sikkim has a very rugged topography and flat lands are difficult to come by. The two principal mountain ranges are the razor edged Singalila on the western border that defines the boundary between Sikkim and Nepal and the undulating Chola on the East a part of the border between Sikkim and Tibet. These ranges form an almost impregnable barrier. The boundary between Sikkim and Bhutan is defined by the low altitude Pangolia Range in the south eastern part of the state.

Most of the peaks above 6100 metres (20000ft) lie towards the western border of Sikkim. On the western border lies the third highest mountain of the world- the Kanchenjunga (28168 ft) high. Other peaks that stand at altitude of above 6100 metres are Kabru, Siniolchu, Pandim, Rathong, Kolthang, Talung,, Kanglaknang, Simvo and Jamsang. On the eastern border the most imposing peak is Paunhri, at an altitude of about 6700 metres (2200ft). The other imposing mountains that are slightly less than 6100 metres are Masthonangye, Yabukjakchen, Narsing and lamaongden.

Through the centre of Sikkim runs another mountain ridge in the north to south direction. This mountain ridge separates the Teesta and Rangit valley and end at the confluence of the two rivers. The peaks of these ridge are Tendong at 8660ft and Maenam at 10612ft.

There are many glaciers in Sikkim but the most important ones are the Zemu glacier, Rathong glacier and the Lonak glacier in North Sikkim.

On the eastern Chola range the most important passes ate the Nathula at14140ft and Jelopla at 14350ft and Bhutan la at 15030 ft-the first two lead to the Chumbi valley in Tibet and the third to Bhutan. On the western border between Sikkim and Nepal lies the Chiwabbanjang pass at 10300 ft and Kang la pass. In the north the important passes are the Chorten nyimala at 19100 ft and Kongra la.

PEAKS AND PASSES OF SIKKIM

Height in ft.	Commencing from South to East	Running from Kanchan-Junga Separating Rangit from Talungchu	From Talungchu separa-ting from Zemu	Separa-ting Lachen Lachung	Other	Total
9000-12000	3	-	-	2	-	5
12001-15000	11	-	-	1	-	12
15001-18000	11	1	1	1	2	16
18001-21000	2	1	1	-	1	5
21001-24000	4	1	1	-	1	7
24001-27000	1	-	-	-	-	1
27001&above	1	-	-	-	-	1
state	33	3	3	4	4	47

Source: DESM&E

LAKES:

On the highway between Gangtok and Nathula lies the serene Changu (tsongo) lake at an altitude of about 12310ft. Two other lakes nearby are the B'dang cho and the Menmacho Kechopari lake is another well known lake that lies on a bifurcation of the route between Gyalsting and Yoksum. The highest concentration of lakes is on the western border north of Chiwabhanjang towards the Base camp. Some of these lakes are Laxmipokhari, Lampokhari, Majurpokhari, twin lakes of Ram-laxman, Dud Pokhari an Samiti lake. Gurudogmar, which is the largest and probably the highest in Sikkim an Cholamu are some other beautiful lakes in North Sikkim.

RIVERS:

The river that flows right across the length of Sikkim is the Teesta meandering through the deep gorges taking tributaries as it goes. Its major tributary is the Rangit which originates from the Rathong Glacier and meets at the border between Sikkim and West Bengal. The river Ramam, a tributary of Rangit an Rangpo chu a tributary of Tista define the Southern border between Sikkim and West Bengal. Tista originates from the lake Cholamu where it is hardly a stream. The rivers of Sikkim are perennial.

HOT SPRINGS:

Sikkim has many hot springs known for their medicinal and therapeutic value. The most important ones are located at Phutchachu (Reshi), Taram-Chu and Yumey Samdong. All these hot springs have high sulphur content and are located near the river banks. The average temperature of the water in these hot springs is 50 °c.

CLIMATE:

One would be surprised to learn that Sikkim possesses all the climates right from the tropical to the tundras. On most parts of the northern, eastern and western borders the earth is blanketed with snow almost throughout the year. On the southern border the altitude is as low as the sea level full of rich tropical forests. Even the climate on two opposite sides of a hill can vary considerably.

TEMPERATURE:

At the places of low altitude like Singtam, Rangpo and Jorethang, the temperatures vary betrween 4°c to 35°c. Places like Gangtok with moderate altitudes of about 6000ft experience temperature between 1c and 25°c whereas at altitudes above 13100 ft., the temperature never above 15°c and remains much below the freezing point during the winters and great part of the spring and autumn.

RAINFALL:

Sikkim is one of the rainiest regions in India. Because of the proximity of Sikkim to the Bay of Bengal and the fact that the mountains of the state come directly in the path of the monsoon clouds, most parts of Sikkim experience torrential rains during summers.

The northern borders experiences comparitively low rainfall because the monsoon clouds dry out by the time they hit the northern barrier. For the state of comparison , Gangtok registers an average of 325 cm rainfall per annum whereas Muguthan in the extreme north experiences an average rainfall of only 60cm per annum.

LANGUAGE:

The language used for communication in Sikkim is Nepali. However everybody seems to know a smattering of Hindi. In major towns most people can communicate in English. Within official correspondences take place in English. Tibetan, Lepcha, Bhutia, and Sikkimese languages are also spoken here.

HISTORY OF SIKKIM

The history pertaining to Sikkim before the seventeenth century is not well documented but it is said that somewhere in the thirteenth century a prince named Guru Tashi had a divine vision that he should go south to seek his fortune in Dinzong "the valley of rice". As directed by the divine vision he along with his family, which included five sons headed in the southern direction. The family during their wanderings came across the Sakya kingdom in which a monastery was being built at that time. The workers had not been successful in erecting pillars for the monastery. The elder son of Guru Tashi raised the pillar single handedly and thereby came to be known as Khye Bhumsa meaning the superior of ten thousand heroes.

The Sakya king offered his daughter in marriage to Khye Bhumsa. Guru Tashi subsequently died and Khye Bhumsa settled in Cjumbi Valley and it was here that he established contacts with the Lepcha chieftain Tetong Tek in Gangtok. Khye Bumsa was issueless and it was with the blessings of Tetong Tek who was also a religious leader, that Khye Bumsa was finally blessed with three sons. Out of gratitude Khye Bumsa visited Tetong Tek a number of times thereafter which ultimately culminated in a treaty of brotherhood between the two chieftains at a place called Kabi Longtsok. This treaty brought about new ties of brotherhood between the Lepchas and Bhutias.

Khye bumsa was succeeded by his third son Mipon-Rab. The fourth son of Mipon-Rab was Furu Tashi and it was he who shifted his family and tribe to Gangtok. The Lepchas had meanwhile broken down into small clans and thereafter came under the protection of the descendants of Guru Tashi.

The great grandson of Guru Tashi was Phunstok and events led to his becoming consecrated as the first king of Sikkim. Phuntsok was born in 1604. It would be now not be out of place to digress to events that were taking place in another sphere. The rifts between the Yellow Hat Sect and the Red Hat Sect of the Buddhists in Tibet had led to the followers of the latter to flee southwards to Sikkim and Bhutan to escape prosecution.

Out of the Red Sect Saints who came to Sikkim in the seventeenth century was Lama Latsun Chembo. He felt that he had a mission to establish a Buddhist monarchy in the hidden country of Denjong. After a long journey he reached a place called Norbungang where he was met by two other holymen. They were Sempa Chembo and Rinzing Chembo. The place where they met was later named as Yoksum meaning the meeting place of three superior ones. These three great holy men had the mission to establish a Buddhist monastery in this country which was made up of small clans. But whom should they choose as the monarch? They sent search party in the easterly direction. The search party

went in search for a man called Phunstok who was found at Gangtok. He is the same Phuntsok of whom a mention has been made earlier and was the great grandson of Guru Tashi.

Phuntsok left for Yuksom with his family and followers and was consecrated as the King of Sikkim in the year 1642 with the title of Chogyal which means the king who rules with righteousness. Phuntsok was also conferred the surname Namgyal.

Phuntsok Namgyal and the three saints immediately got to the task of successfully bringing the Lepcha tribes under the Buddhist fold. Politically, Sikkim expanded its territory which included Chumbi valley, the present Darjeeling district and a part of present day Nepal and Bhutan. The capital of Sikkim was established in Yoksum itself. Its was also then that Sikkim derived its name from "su" "khin" which in the Limbu language means "New House" signifying the new palace that the first king constructed.

Phuntsok Namgyal was succeeded by his son Tenzing Namgyal in 1670. Tenzing Namgyal shifted the capital from Yoksum to Rabdanste near present day Gyalshing. Tensung Namgyal married thrice. One of his wives was the daughter of the Limboo Chieftain Yo Yo Hang. His son Chakdor Namgyal from the second wife succeeded him in the year 1700. However his half sister Pendeongmu, whose mother was from Bhutan, claimed that she was entitled to the throne. Because of this fact, serious difference arose between her and Chakdor Namgyal had to flee Sikkim and the Bhutanese forces occupied the capital of Rabdanste. In the process, Kalimpong which was part of Sikkim was lost to Bhutan. Kalimpong later became a part of British India following a war between Bhutan and the British.

Chakdor choreographed many Lama dances especially the ones pertaining to the Phang Labsol festival. He also introduced the system of sending one son from each family to the monastery. When the Chogyal Chakdor Namgyal was ill at the Ralong hot springs in 1760, his half sister Pendeongmu had him murdered. She was later caught and strangled to death. Gyurmed, Chakdor Namgyal's son succeeded him in 1717. Gyurmed Namgyal reign was uneventful.

Gyurmed Namgyal was succeeded by his illegitimate son Phuntsok Namgyal in1733. Phuntsok Namgyal was born posthumously. Bhutan tried to occupy Sikkim but the forces of that country were driven back. The Nepalis on the western border of Sikkim started becoming brazen in their imperialistic designs and made frequent attacks into Sikkims territory.

Phuntsok Namgyal was succeeded by his illegitimate son Tenzing Namgyal in 1780. During the reign of Tenzing Namgyal, Nepali forces occupied large chunks of Sikkimese territory. They attacked Rabdanste and the Chogyal had to flee to Tibet. The Nepalis excursions emboldened them to penetrate even into Tibet. This led to the Chinese intervention and Nepal was defeated. In the Sino-Nepal treaty, Sikkim lost some of its land to Nepal, but monarchy was allowed to be restored in the country. Tenzing Naamgyal died in Lhasa and his son Tshudphud Namgyal was sent to Sikkim in 1793 to succeed him as the monarch. Rabdanste was now considered too insecure because of its proximity to the Nepali border and Tsudphud Namgyal shifted the capital to a place called Tumlong.

The defeat of Nepal by the Chinese did little to weaken the expansionist designs of the Nepalis. They continued to make attacks into the neighbouring British territories and Sikkim. British India succesfully befriended Sikkim. The British felt that by doing so the expanding powers of the Gorkhas would be curtailed. Britain also looked forward to establishing trade links with Tibet and it was felt that the route through Sikkim was the most feasible one.

War between Nepal and British India broke out in 1814 and came to an end in 1816 with the defeat of the Nepalis and the subsequent signing of the treaty of Singauli. As a direct spin-off, British India signed another treaty with Sikkim in 1817 known as the treaty of Titalia in which former territories which the Nepalis captured were restored to Sikkim. H.H. Risley writes in the "The Gazeteer of Sikkim,1894",that by the Treaty of Titalila British India has assumed the position of lords paramount of Sikkim and a title to exercise a predominant influence in that State.

The British became interested in Darjeeling both as a hill resort and an out-post from where Tibet and Sikkim would be easily accesible. Following a lot of pressure from the British, Sikkim finally gifted Darjeeling to British India on the understanding that a certain amount would be paid as annual subsidy to Sikkim. The gift deed was signed by the Chogyal Tsudphud Namgyal in 1835. The British appointed a superintendent in the ceded territory. The British however did not pay the compensation as had been stipulated and this led to a quick deterioration of relation between the two countries. There were also differences between the British Government and Sikkim over the status of people Sikkim. Because of the increased importance of Darjeeling, many citizens of Sikkim mostly of the labour class started to settle there as British subjects. The migration disturbed the feudal lords in Sikkim who resorted to forcibly getting the migrants back to Sikkim. This annoyed the British Government which considered this acts of kidnapping of British citizens. The relations deteriotated to such an extent that when Dr. Campbell, the Superintendent of Darjeeling and Dr. Hooker visited Sikkim The British issued an ultimatum and the two captives were released after a months detention. In February,1850, an expedition was sent to Sikkim which resulted in the stoppage of the annual grant of Rs.6000 to the Maharaja of Sikkim and also the annexation of Darjeeling and a great portion of Sikkim to British India.

Tsudphud Namgyal was succeeded by his son Sidekong Namgyal in 1863. The British Government started the payment of annual subsidy of Rs.6000/- in 1850 for Darjeeling. In an attempt to keep good relations with Sikkim, the British enhanced the subsidy to Rs.12000 per annum.

Chogyal Sidekong Namgyal died in 1874 issueless and was succeeded by his half brother Thutob Namgyal.

SOME OLD SIKKIMESE LAWS AND CUSTOM

Marriage Customs of the Sikkkimese.

If the eldest brother takes a wife, she is common to all his brothers. If the second brother takes a wife, she is common to all the brothers younger than himself. The eldest brother is not allowed to cohabit with the wives of the younger brothers. Should there be children in the first case, the children are named after the eldest brother, whom they call father. In case2, after the second brother & c. Three brothers can marry three sisters, and all the wives are common, but this case is not very often seen. In such a case the children of the eldest girl belong to the eldest brother, & c. if they each bear children. Should one or more not bear children, then the children are apportioned by arrangement. Two men not related can have one wife in common, but this arrangement is unusual. A man occasionally lends his wife to a friend, but the custom is not general and uncommon.

If a girl becomes pregnant before marriage and afterwards marries the father of the child, the child is considered legitimate, but the man is fined a bull or its equivalent, which go to her relatives. Should the man by whom the girl was made pregnant not marry her, and should she afterwards marry another, the child remains with the woman's brothers or relatives. A woman is not considered dishonoured by having a child before marriage.

Taking another's wife or adultery.

The old law runs that if any one takes a Raja's or Lama's wife, he may be banished, have his hands cut off, or his penis cut off. He may also have to pay a weight in gold equal to his penis and testicles. For violating woman of different position 3oz. of gold have to be paid to the woman's relations and 4 gold srang to the Government, besides many things in kind.

For violating of a woman of the same position, 2 or 3 fold srang and several kinds of articles have to be paid. If the woman goes of her own accord to the man, he has only to pay 1 gold srang and three kinds of articles. Should one man's wife entice another married man to go with her, she has to pay seven things in kind. Should a man and woman cohabit on a journey there is no fine.

The British meanwhile were making concerted efforts to establish trade links with Tibet and also impose their influence. The Britishers started building roads in Sikkim. This was viewed with suspicion by Tibet and in 1886, some Tibetan militia occupied Lingtu in Sikkim near Jelepa pass.

The Britishers appointed Claude White as the first Political Officer in Sikkim in 1889 and Chogyal Thutob Namgyal was virtually under his supervision. Claude White played a pioneering role in bringing about radical changes in the administrative setup as well as improving the economy of the state by introducing revenue earning agricultural methods.

Thutob Namgyal shifted the capital from Tumlong to Gangtok in 1894.

The garden party at the Gangtok Residency in 1890

My first party would have seemed very quaint to European eyes. I had invited the Maharaja and Maharani, with the members of Council, and all Kazis and headmen with their wives and families. A goodly crowd assembled about four hours before the appointed time and lined the road just outside the Residency grounds, sitting about on the grassy edges until they were told they might come in, determined not to be late. Most of them had never seen, much less tasted Eurpean sweets or cakes, and when tea-time came they simply cleaned the tables of everything, and what they could not eat they carried away in front of their voluminous glasses, and it all took place so quietly while my wife and I were with the Maharaja and Maharani and more important guests in another tent. I hardly realised what was going on.

The spoons and glasses, which I think they wanted as mementos of the good time they had, were returned, on the Phodong Lama and Shoe Duane remonstrating, and they departed very happily, declaring they had highly enjoyed their entertainment, and that all their heads were going round, a polite way of sayingI had not stinted the drinks. They were always a very cheerful crowd and very pleasant to deal with, though indolent and improvident.

After my house was finished, nothing pleased them more than to be allowed to wander round the rooms, especially the bedrooms. They never touched anyting but liked to see how we lived and what European furniture was like.

Almost every market day little bands of women dressed in their best clothes would arrive with few eggs, a pat of butter to make their salaams to my wife a request that they might be allowed to go over to the house, and their progress was marked with exclamations and gurgles of laughter at the strange of Sahib-log.

While the house was building, the Maharani came several times to see how it was getting on, and told me I had built the walls much too thin and it would never stand. In their own houses and monasteries the walls are very thick, from 4 feet 6 inches, and have always a small chamber. However, later on I had the best of the argument when, in the earthquake of 1897, the palace, notwithstanding its thick walls, collapsed entirely and had to be rebuilt, while the Residency, though badly cracked, remained standing.

In May 1888, the Tibetans attacked Gnathang below Jelepa but were driven away. In September of the same year the British called for reinforcements and the Tibetans were pushed back from Lingtu. A memorial was built at Gnathang for the few British soldiers who died in the engagements.

Alarmed by the defeat of the Tibetans and apprehending that they would lose influence over Tibet, the Chinese began negotiations with the British that finally resulted in the signing of the Anglo-Chinese convention on 17th March,1890. This treaty clearly defined the boundary between Sikkim and Tibet and recognised British India's direct control over the internal and external affairs of Sikkim and prohibited Sikkim to have direct links with any other country without the permission of the British.

Towards the last quarter of the nineteenth century, plainsmen especially, the Marwaris started to come to Sikkim for trade. Jetmull & Bhojraj established a bank at Gangtok in 1899 and soon became the official bank of the Government and remained so till the seventies.

Alarmed by the growing Russian influence in Tibet and also to assert itself, the British sent an expedition led by Col. Younghusband to Lhasa via Jelepla in 1904. The expedition met with resistance from the Tibetan army which defeated and a treaty was dictated by Younghusband on Tibet. The treaty secured monopoly trading privileges in Tibet for the British.

Thutob Namgyal was succeeded by his son Sidekong Tulku in 1914. Unfortunately he did not live long and died in the same year. He was succeeded by his half brother Tashi Namgyal who promulgated many reforms in the state.

Harishwar Dayal was appointed as the first Indian Political Officer to Sikkim after Independence. He was succeeded by Balraj Kapur, Appa.B.Pant, Inderjit Bahadur Singh, V.H. Coelho, N.B Menon, K.S. Bajpai, B.Singh and Gurubachan Singh in that order till the merger of Sikkim with India.

In 1949, John Lall joined as the first Dewan or Principal Administrative Officer (PAO) of Sikkim. The Dewan was the highest bureaucrat and the head of administration. He was on deputation to the State administration from the Government of India. During the Chogyal's absence, he used to function on his behalf. John Lall was succeeded by Nari Rustomji and then Haldipur followed by Baleshwar Prasad and I.S. Chopra.

Tashi Namgyal died in 1963 and was succeeded by his son Palden Thondup Namgyal. By the beginning of 1970 there were rumblings in the political ranks and file of the state which demanded the removal of monarchy and the establishment of a democratic setup. This finally culminated in widespread agitation against Sikkim Durbar in 1973. There was a complete collapse in the administration. The Indian Government tried to bring about a semblance of order in the state by appointing a Chief Administrator Mr. B.S. Das. Further events and elections led to Sikkim becoming transformed from a Protectorate to an Associate State. On the4th September 1974, the leader of Sikkim Congress, Kazi Lendup Dorji was elected as the Chief Minister of the State. The Chogyal however still remained as the constitutional figure head monarch in the new setup. Events leading to the confrontation between the Chogyal and the popular Government caused Sikkim to become a full fledged state of India on 16th May 1975. Mr. B.B.Lal was the first Governor of Sikkim.

After B.B.Lal the office of Governor was held by H.J.H. Taleyarkhan, K.Prabakar Rao, B.N.Singh, T.V.Rajeshwar, S.K.Bhatnagar, Admiral. R.H. Tahiliani, P.Shiv Shankar and Chaudhary Randhir Singh.

After Kazi Lendup Dorji, N.B. Bhandari was elected as the Chief Minister for a long spell of almost 14 years. In the election in November 1994, Pawan Kumar Chamling was installed as the Chief Minister of Sikkim. He has again been returned to power in the State Assembly election in October 1999.

INDICATORS OF THE ECONOMY

Particulars	Unit	1995-96	1996-97	1997-98	1998-99	1999-00'
Net State Product at Current Prices	Rs. In Lakhs	42620	49112	58308	64126	68608
Indices of Growth (Annual)	%	19.82	15.23	18.73	9.98	6.99
Net State Domestic Product at Constant Prices						
Per Capita income at current price	Rs. In Lakhs	8905	9901	11324	12018	12442
Indices of Growth (Growth)	%	15.71	11.18	14.37	6.13	3.53
Per Capita income at constant price	Rs.					

Quick Estimates. Source:DESM&E

Integrated Child Development Services[ICDS]

Social welfare.

Women and Child Development Division.

Children are the most precious of our resources. About 17% of our population consists of children and most of them live in villages with inadequate facilities in terms of health , education and nutrition.

Government of India adopted the National Policy for Children to ensure comprehensive child development services on a National scale for overall development of children and upliftment of women in rural,tribal, city-slum and backward areas in the country. It was formally implemented from 2nd October 1975.

In Sikkim, one block was adopted for ICDS programme in the same year, covering South and West Districts, under the department of Health an Social Welfare. The first project of Sikkim, Namchi-Gyalshing Project had a sanctioned strength of 150 ICDS centres. After1978-79, all the four projects namely Singtam, Mangan, Namchi and Gyalshing had a strength of 75 centres each.

The Govt. of Sikkim created a full fledged Department of women and child welfare from 1995 and ICDS came under its purview but lately it is known as Social Welfare Women and Child Development Division. ICDS is cent percent centrally located.

Objectives:

The programme seeks to:-

- -reduce the "incidence of low birth weight and severe malnutrition among children.
- -bring down the mortality and morbidity rates among children 0-6 years old.
- -reduce school drop-out rates trough early stimulation programmes for children of 3-6 years.
- -provide the environmental conditions necessary for the mental, physical and social development of children.

To achieve these objectives, a series of package are provided to the beneficiaries of ICDS through the anganwadi worker in the village at the anganwadi centre. Anganwadi worker is a local body selected as an honorary worker. The services are:-

- Supplementary feeding.
- Immunisation
- Referral services
- Health check-up
- Nutrition and health education
- Pre-school education

Women play a major role in child development under ICDS and the groups of women who get special attention are:

- Pregnant women
- Nursing mothers (first 6 months)
- Adolescent girls.

staff pattern	East	North	South	West	Urbanslum	Total
CPDO	1	1	1	1	1	5
supervisor	7	5	6	6	1	25
AWWS	149	87	110	110	25	496
Helpers	149	87	110	110	25	496
OfficeStaff						
S.A.	1	1	1	1	1	5
LDC	2	2	2	2	2	10
Peon	1	1	1	1	1	5
Driver	1	1	1	1	1	5
M.O.	1	1	1	1	1	5
ANM	6	6	6	6	4	28

Glossary:
CPDO- Child Development Project officer
AWWS- Anganwadi workers
SA-Statistical Officer
MO-Medical Officer
ANM- Auxillary Nurse mid-wife
LDC-

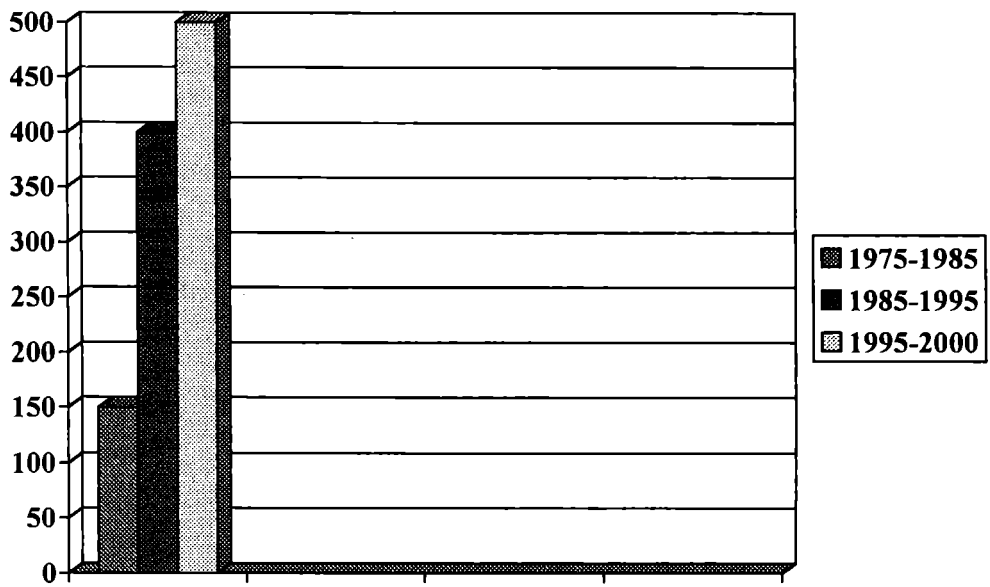
Monitoring Motivation and Continuing Education.

Monitoring motivation and continuing education of workers at the periphery are the most important activity of ICDS. It has a built in system of keeping records of immunization, health check-up, birth and death, supplementary feeding, and pre-school activities at Anganwadi centre. And based on these records, the workers send an updated report every month to the:

-CPDO through supervisors.

-MO through lady health visitors.

After compilation, these reports are sent to Delhi, Department of Women and Child, Ministry of Human Resource, Govt. of India and Central Technical Cell, Delhi respectively.



Expansion of ICDS centres since 1975

In 1975-76, one project was operating with 150 ICDS centres scattered all over backward, rural and tribal areas of Sikkim. But within a span of twenty years it has increased to five ICDS Projects and 496 ICDS centres.

PROJECTWISE IMMUNIZATION COVERAGE OF SIKKIM 1995-2000						
1995-96	**East**	**North**	**South**	**West**	**Urban**	**Total**
BCG	818	117	1124	1026		3085
Measles	681	198	961	808		2648
DPT	906	167	1301	1148		3522
POLIO	898	169	1244	1278		3589
T.T. for P.W.	800	91	461	414		1766
1996-97						
BCG	512	293	1352	1305	97	3559
Measles	377	206	835	843	57	2318
DPT	910	168	1280	1568	405	4331
POLIO	924	386	1174	1551	380	4415
T.T.for P.W.	637	173	682	625	110	2221
1997-98						

BCG	528	379	1276	1033	211	3912
Measles	374	239	894	727	104	2723
DPT	882	452	691	1322	709	4576
POLIO	845	443	1207	1228	664	4952
T.T. for P.W.	400	201	613	481	94	1996
1998-99						
BCG	649	399	1762	1075	47	4289
Measles	757	475	931	829	42	3015
DPT	1237	620	1375	1516	212	5060
POLIO	1213	618	1321	1382	193	4865
T.T. for P.W.	769	342	668	551	28	2460
1999-00						
BCG	611	469	857	904	10	2586
Measles	690	448	1060	801	39	2902
DPT	1477	416	928	1373	233	4491
POLIO	1487	416	934	1274	212	4591
T.T. for P.W.	687	184	705	913	55	2708

PROJECTWISE SUPPLEMENTARY NUTRITION COVERAGE OF PREGNANT WOMEN FOR LAST 5 YEARS						
1995-96	**EAST**	**NORTH**	**SOUTH**	**WEST**	**URBAN**	**SIKKIM**
Registered	815	66	384	325		1590
Received	584	44	372	280		1280
%Percentage	71.66	66	96.88	86.15		80.50
1996-97						
Registered	680	70	401	250	436	1837
Received	549	55	346	200	333	1483
%Percentage	80.74	79	86.28	80	71.92	80.73
1997-98						
Registered	751	145	457	307	653	2313
Received	493	27	654	285	396	1555
%Percentage	65.65	19	77.46	92.83	60.64	67.23
1998-99						
Registered	861	118	490	421	439	23.29
Received	348	49	490	279	652	1518
%Percentage	40.46	42	100	66.27	80.18	65.18
1999-2000						
Registered	383	132	461	475	439	1890
Received	224	75	450	360	352	1461
%Percentage	58.49	57	97.61	75.79	80.18	77.30

PROJECTWISE COVERAGE OF SUPPLEMENTARY FEEDING OF NURSING MOTHERS IN ICDS FOR LAST 5 YEARS.						
1995-96	**East**	**North**	**South**	**West**	**Urban**	**Total**
Registered	946	546	796	960		3248
Received	728	421	726	560		2435
%Percentage	76.96	77	91.21	58.33		74.97
1996-97						
Registered	769	600	932	1117	930	4348
Received	35	450	810	806	718	3419
%Percentage	82.57	75	86.91	72.16	77.20	78.63
1997-98						
Registered	821	653	852	923	1320	4569
Received	585	56	563	795	827	2826
%Percentage	71.25	9	66.08	86.13	62.65	61.85
1998-99						

Registered	793	552	619	1011	1016	3991
Received	325	68	619	597	524	2133
%Percentage	40.98	12.32	100	59.05	51.57	53.45
1999-2000						
Registered	897	648	621	988	1016	4170
Received	525	80	608	822	524	2559
%Percentage	58.42	12.34	97.91	83.20	51.57	61.37

PROJCECTWISE PRE-SCHOOL COVERAGE OF CHILDREN IN SIKKIM 19995-2000						
1995-96	**East**	**North**	**South**	**West**	**Urban**	**Total**
Enrolled	2983	2720	3015	3648		123366
Attended	2478	2686	2748	2390		10302
Percentage	83.07	98.75	91.14	65.52		83.31
1996-97						
Enrolled	2604	2911	2445	3645	3406	15011
Attended	2009	2700	1943	2526	2666	11844
Percentage	77.15	93	79.47	69.30	78.27	78.90
1997-98						
Enrolled	2180	3012	2711	3007	4504	15414
Attended	1895	2754	1817	1682	3465	11613
Percentage	86.93	91	67.02	55.94	76.93	75.34
1998-99						
Enrolled	2906	7039	1953	4010	3896	19804
Attended	2544	6029	1836	2311	2995	15715
Percentage	87.54	86	94.01	57.63	76.87	79.35
1999-2000						
Enrolled	3042	8091	1906	4271	4267	21577
Attended	2281	7011	1827	2737	3161	17017
Percentage	74.98	87	95.86	64.08	74.08	78.87

PROJECTWISE COVERAGE OF SUPPLEMENTARY NUTRITION FOR CHILDREN 6 MONTH TO 6 YEARS FOR THE LAST 5 YEARS						
1995-96	**East**	**North**	**South**	**West**	**Urban**	**Total**
Registered	6856	3115	6546	6869		23386
Received	4728	2288	6100	4005		17175
%Percentage	69.75	74	93.19	58.31		73.44
1996-97						
Registered	5831	3300	6190	7774	8341	31346
Received	4302	2400	4884	5871	5639	23096
%Percentage	73.78	73	78.90	75.52	67.61	73.47
1997-98						
Registered	6193	3333	6407	6995	11842	34770
Received	4143	460	4345	5194	6043	20,385
%Percentage	66.90	14	67.82	74.25	58.63	58.63
1998-99						
Registered	7612	3665	4715	5900	9596	31548
Received	2646	1086	4407	2502	4863	15506
%Percentage	34.76	30	93.47	42.41	50.36	49.15
199-2000						
Registered	8898	4019	4262	8885	9656	35720
Received	4368	1390	4160	7261	4863	22042
%Percentage	49.09	35	97.61	81.72	50.36	61.71

Project wise Population of ICDS Covered Villages Recorded in Village Survey						
1995-96	**East**	**North**	**South**	**West**	**Urban**	**Total**
Population	68749	20764	65113	63791		218117
Children (0-6yrs)	12,163	5651	9778	9447		37489
Pregnant	949	94	424	381		1848
Nursing	1059	690	1009	1027		3785
1996-97						
Population	66480	20500	67549	65740	12,589	232858
Children (0-6yrs)	11564	61549	9782	9516	2117	39128
Pregnant	787	98	446	410	69	1810
Nursing	908	800	1128	1053	46	4035
1997-98						
Population	61739	20716	67831	65956	12632	228874
Children (0-6yrs)	11,111	6300	9789	10197	2049	39446
Pregnant	643	123	427	481	70	1744
Nursing	923	867	1063	1086	153	4092
1998-99						
Population	70275	20812	67868	67199	8622	234776
Children (0-6yrs)	12,527	6409	9801	10219	1550	40506
Pregnant	966	99	425	551	37	2078
Nursing	1042	900	1036	11066	107	4191
1999-2000						
Population	71286	20911	68160	67856	10371	238584
Children (0-6yrs)	12,812	6520	9952	10962	1843	42089
Pregnant	1085	105	458	487	35	2170
Nursing	1133	979	1109	1121	125	4467
Source: Annual Report, ICDS Dept. of Welfare.						

EDUCATION (As on 31st March 2000)						
NO. OF GOVERNMENT EDUCATIONAL INSTITUTIONS						
Particulars	**Unit**	**North**	**East**	**South**	**West**	**State**
Pre Primary School	No.	76	235	212	216	739
Lower Primary	"	21	35	48	75	179
Primary School	"	33	114	94	81	322
J.H. School	"	09	44	43	33	129
Secondary School	"	10	24	22	20	76
Senior Sec. School	"	02	14	7	6	29
T.T.I.	"	-	01	-	-	01
S.I.E.	"	-	01	-	-	01
Degree College	"	-	01	01	-	02
Law College	"	-	01	-	-	01
B.Ed. College	"	-	-	01	-	01
S.I.H.N.S.(Sheda)	"	-	01	-	-	12
Sanskrit Patshalas	"	-	08	02	02	50
Monastery school (Gumpa)	"	14	16	12	8	01
MADRASA TECHNICAL EDUCATIONAL ENGG. COLLLEGE	"	-	-	-	-	-
ITI	"	-	01	-	-	01
Total	"	165	497	422	441	1545
ENROLMENT IN GOVERNMENT SCHOOLS AND COLLEGES						
Pre Primary School	No.	2088	8290	6564	6220	23162
Primary (class I-V)	"	7566	31325	21721	20058	80670
J.H.S. Stage (Class VI-VIII)	"	1560	11349	6063	6045	25017

Secondary School Stage (IX-X)	"	480	3557	1938	1612	7587
Senior Sec. School Stage (Class XI-XII)	"	202	1690	734	687	3313
Degree College	"	-	1663	245	-	1908
ENGG. College	"	-	-	-	-	-

TEACHER PUPIL RATIO (As on 31st March 2000)				
Stage	**Unit**	**No. of Students**	**No. of Teachers**	**Ratio (Students per Teaachers)**
Pre Primary Stage	No.	23162	761	1:30
Primary Stage (Class I-V)	No.	80670	4668	1:17
JHS Stage (Class VI-VIII)	No.	25017	1182	1:21
Secondary School Stage (Class IX-X)	No.	7587	798	1:10
Senior Sec. School Stage (Class XI-XII)	No.	3313	362	1:10
Source: Education Department				

WHY PROTECT FORESTS

Our experience shows that the rapid destruction of forest has been posing perpendicular as well as horizontal problems directly and indirectly affecting the weaker section of the society. The crux of the problem has culminated into

- The earnings of the poor from the forest substantially have decreased.
- Unemployment among rural people has mounted.
- Poverty has been increasing.
- Pauperization, marginalisation and polarisation are other phenomena.
- Vast geographical area of the country has turned into desert.
- Environment has been destroyed and polluted.
- Eco-system shows imbalance and shakiness.
- Frequent visits by droughts and flood.
- More pressure on agriculture for livelihood.
- Flora and Fauna are vanishing.
- Innumerable plant and animal species have been vanishing away from the surface of the earth and others are in extinction threshold.
- Energy crisis has increased.
- Forest based industries are decreasing.
- Revenue to the public exchequer has come down.
- Man has been to hard to nature.
- Longevity of the human life has come down.
- Nature is no more a treasure and source of pleasure, consolation for the poets, pilgrims, bereaved persons.
- The Eco-system, environment and climatic condition has considerable change into toto.

NATURAL RESOURCES OF SIKKIM AT A GLANCE

Fauna

- Mammals 81 species
- Birds 550 species
- Butterflies 650 species
- Reptiles 33 species
- Frogs 16 species

Flora

- Orchids 550 species(95 genera)
- Rhododendron 36 species(45 varieties)
- Flowering Plants 4000 species
- Conifers 9 species
- Ferns 300 species
- Medicinal Plants Plenty(not enumerated)

and herbs

Mountains etc.

- Mountains and peaks 28 Number
- Glaciers 21 –do-
- Lakes 180 –do-
- Rivers and Streams 104 –do-

RESTRICTED AND PROTECTED TREES

Restricted Trees

- Dar
- Khamari
- Tooni
- Panisaj
- Sisum
- Juniper
- Mel
- Bahuni Kath
- Rani Champ
- Jat Katus
- Protected Trees
- Malagiri
- Yew Tree
- Chimal (all kinds)
- Gurans (all kinds)
- Chewri
- Tamala (Cinnamomum zylancium)
- Kimbu
- Sinkauli
- Amala
- Harra
- Barra
- Bar (Ficus bengalensis)
- Pipal (Ficus religiosa)
- Labar (Ficus elastica)
- Siltimbur and any other species which may be included from time to time.

LIST OF HIGH ALTITUDE ALPINE TIBETAN MEDICINAL PLANTS

- Cupressus torulosa
- Sophora florescens
- Rhodendron cephalanthum
- Savina recurva
- Pterocarpus hookeri
- Rhodedendron campanulatum
- Aristolochia saccata
- Melothria heterophylla
- Setera glauca
- Meconopsis sp.
- Gentiana tibetica
- Lancea tibetica
- Gentima dahurica
- Rhodiola saera

AREA STATISTICS FOR SIKKIM- TOTAL STATE (IN SQ. KMS.)					
SL. NO.	CLASS	RESERVE FOREST	RESERVE BLOCK	TOTAL	%OF TOTAL
1.	CROP LAND (TERRACED/SEMI TERRACED	0.00	604.85	604.85	8.52
2.	FALLOW/SCRUB IN REVENUE BLOCKS	0.00	155.69	155.69	2.19
3.	SAL DENSE FOREST	5.30	0.77	6.07	0.09
4.	SAL OPEN FOREST	15.93	1.54	70.47	0.25
5.	SAL DEGRADED FOREST	3.32	0.71	4.03	0.06
6.	MIXED DENSE FOREST	464.46	138.88	603.34	8.50
7.	MIXED OPEN FOREST	433.37	333.38	766.75	10.81
8.	MIXED DEGRADED FOREST	194.56	235.06	429.62	6.05
9.	DENSE CONIFER FOREST	351.94	16.14	368.08	5.19
10.	OPEN CONIFER FOREST	340.63	21.55	362.18	5.10
11.	DEGRADED CONIFER FOREST	156.89	16.30	173.19	2.44
12.	OAK-RHODENDRON FOREST	100.34	26.24	126.58	1.78
13.	SCRUBS IN RESERVE FOREST	101.87	0.00	101.87	1.44
14.	FOREST BLANKS	90.56	0.00	90.56	1.28
15.	ALPINE SCRUB	611.44	27.72	639.16	9.01
16.	ALPINE PASTURES	431.32	0.00	431.32	6.08
17.	ALPINE BARREN	815.80	2.35	818.15	11.53
18.	SNOW	1018.23	5.41	1023.64	14.43
19.	GLACIERS	208.23	0.00	208.23	2.93
20.	LAKES	32.30	0.70	33.00	0.47
21.	RIVERS/MAJOR STREAMS	31.81	32.50	64.31	0.91
22.	DRY RIVER BEDS	31.49	9.10	40.59	0.57
23.	BUILT-UP AREA	0.30	3.24	3.54	0.05
24.	LAND SLIDE AREAS	5.37	5.16	10.53	0.15
25.	MISCELLANEOUS	6.93	6.30	13.23	0.19
TOTAL		**5452.39**	**1643.59**	**7095.78**	**100.00**

AREA STATISTICS FOR SIKKIM-TOTAL STATE (IN SQ.KMS.)					
SL. NO	CLASS	RESERVE FOREST	REVENUE BLOCK	TOTAL	%OF TOTAL
1.	CROP LAND (1+2)	0.00	760.54	760.54	10.72
2.	SAL FOREST (3+4+5)	24.55	3.02	27.57	0.39
3.	MIXED FOREST (6+7+8)	1092.39	707.32	1799.71	25.36
4.	CONIFER FOREST (9+10+11+12)	949.80	80.23	1030.03	14.52
5.	FOREST BLANKS/SCRUBS (13+14)	192.43	0.00	192.43	2.71
6.	ALPINE SCRUB/PASTURES (15+16)	1042.76	27.72	1070.48	15.09
7.	ALPINE BARREN (17)	815.80	2.35	818.15	11.53
8.	SNOW (18+19)	1226.46	5.41	1231.87	17.36
9.	LAKES/STREAMS/DRY RIVERS (20+21+22)	95.60	42.30	137.90	1.94
10.	TOWNSHIP (23)	0.30	3.24	3.54	0.05
11.	MAJOR LANDSLIDES (24)	5.37	5.16	10.53	0.15
12.	MISCELLANEOUS (25)	6.93	6.30	13.23	0.19

AREA STATISTICS FOR SIKKIM-TOTAL STATE (IN SQ.KMS.)					
SL. NO	CLASS	RESERVE FOREST	REVENUE BLOCK	TOTAL	%OF TOTAL
1.	CROP LAND (1+2)	0.00	760.54	760.54	10.72
2.	DENSE FOREST (3+6+9)	82.70	155.79	977.49	13.78
3.	OPEN FOREST (4+7+10+12)	890.27	382.71	1272.98	17.94
4	DEGRADED FOREST (5+8+11)	354.77	252.07	606.84	8.55
5.	FOREST BLANKS/SCRUBS (13+14)	192.43	0.00	192.43	2.71
6.	ALPINE SCRUB/PASTURES (15+16)	1042.76	17.72	1070.48	15.09
7.	ALPINE BARREN (17)	815.80	2.35	818.15	11.53
8.	SNOW (18+19)	1226.46	5.41	1231.87	17.36
9.	LAKES/STREAMS/DRY RIVERS (20+21+22)	95.60	42.30	137.90	1.94
10.	TOWNSHIP (23)	0.30	3.24	3.54	0.05
11.	MAJOR LAND SLIDES (24)	5.37	5.16	10.53	0.15
12.	MISCELLANEOUS (25)	6.93	6.30	13.23	0.19

SOURCE: INDIAN REMOTE SENSING SATELLITE IA (LSS ii) DATA OF NOVEMBER, 1988

LAND USE STATISTICS FOR SIKKIM-TOTAL STATE (IN SQ.KMS.)					
SL. NO	CLASS	RESERVE FOREST	REVENUE BLOCK	TOTAL	%OF TOTAL
1.	CROP LAND	0.00	760.56	760.56	10.72
2.	TOTAL TREE COVER (3+–+12)	2.66.74	790.57	2857.31	40.27
3.	FOREST BLANKS/SCRUBS (13+14)	192.43	0.00	192.43	2.71
4.	ALPINE SCRUB/PASTURES (15+16)	1042.76	27.72	1070.48	15.09
5.	ALPINE BARREN (17)	185.80	2.35	818.15	11.53
6.	SNOW	1226.46	5.41	1231.87	17.36
7.	LAKES/STREAMS/DRY RIVERS (20+21+22)	95.60	42.30	137.90	1.94
8.	TOWNSHIP (23)	0.30	3.24	3.54	0.05
9.	MAJOR LAND SLIDES (24)	5.37	5.16	10.53	0.15
10.	MISCELLANEOUS (25)	6.93	6.30	13.23	0.19
	TOTAL	5452.39	1643.61	7096.00	100.00

FOREST COVER-COMPARATIVE SITUATION (1987-89)

FOREST COVER ASSESMENT (AREA IN SQ.KMS.)					
SL. NO.	**STATE/ UNION TERRITORY**	**1987/ASSE-SSMENT BASED ON IMAGERY 1981-83**	**1989ASSE-SMENT BASED ON IMAGERY 1985-88**	**DIFFER-ENCE IN SQ.KM.**	**CHANGE**
1.	ANDHRA PRADESH	50194	49711	2283	4.55
2.	ARUNACHAL PRADESH	60500	68763	8263	13.66
3.	ASSAM	26386	26058	328	1.24
4.	BIHAR	28748	26934	1814	6.31
5.	GOA (INCL. DAMAN & DIU)	1285	1300	15	1.17
6.	GUJRAT	13750	11670	2080	15.13
7.	HARYANA	644	563	81	15.28
8.	HIMACHAL PRADESH	12882	13377	495	3.84
9.	JAMMU & KASHMIR	20880	20424	456	2.18
10.	KARNATAKA	32264	32100	164	0.51
11.	KERALA	10402	10149	153	2.43
12.	MADHYA PRADESH	127749	133191	5442	4.26
13.	MAHARASHTRA	47416	44058	3358	7.08

14.	MANIPUR	17679	17885	206	1.17
15.	MEGHALAYA	16511	15690	821	4.97
16.	MIZORAM	19092	18178	914	4.97
17.	NAGALAND	14351	14356	5	0.03
18.	ORISSA	53163	47137	6026	11.33
19.	PUNJAB	766	1151	385	50.26
20.	RAJASTHAN	12478	12966	488	3.91
21.	SIKKIM	2839	3124	285	10.04
22.	TAMILNADU	18380	17715	665	3.62
23.	TRIPURA	5743	5325	418	7.28
24.	UTTARPRADESH	31443	22844	2401	7.64
25.	WEST BENGAL	8811	8394	417	4.73
26.	ANDAMAN & NICOBAR ISLANDS	7603	7624	21	0.28
27.	CHANDIGARH	2	8	6	300.00
28.	DADRA & NAGAR HAVELI	237	205	32	13.50
29.	DAMAN & DIU	-	2	2	0.00
30.	DELHI	15	22	7	46.67
31.	LAKSHWADEEP	-	-	0	0.00
32	PONDICHERRY ,	8	-	0	0.00

CIRCLE WISE ACTIVITIES OF THE DEPARTMENT

Territorial Circle.

Territorial Circle deals with the implementation of Indian Forest Act, 1927, Sikkim Forests, Water Courses, Road Reserve (Protection and Preservation) Act,1988 and Forest (Conservation) Act, 1980. Prevention and control of forest fires, control of illicit felling of trees, control and regulation of movement of timber and other forest produce, control and eviction of encroachment, issuing marking orders, transit permits as well as afforestation are the activities carried out by Territorial Circle.

Social-Forestry Circle

Social Forestry Circle implements the 50:50 Centrally Sponsored Scheme Area Oriented Fuelwood and Fodder Project in all the four districts. Creation of Awareness among the rural people for raising fuelwood, fodder and timber yielding trees and grasses in the wastelands and in the fringes of the cultivated lands and distribution of seedlings to the villagers for planting in individual holdings are some of the activities carried out by this Circle.

Land-use Circle

This Circle carries out the activities mainly related to soil and water conservation in the state. Afforestation and othere soil conservation activities such as vegetative engineering, dry rubble masonry work etc. is being carried out in 42 identified watersheds by Land-Use Circle.

Wildlife Circle

The Wildlife Circle looks after the activities which are oriented toward protection and preservation of endangered flora and fauna in the state. The activities of the circle are widespread in the protected area network of the wildlife sanctuaries and the high altitude Khangchandzonga National Park. Implementation of Wildlife Protection Act, 1972 in all four district and management of the protected area network is the main function of this circle. The protected area network comprises of the following National Park and Sanctuaries.

1. Khangchendzonga National Park 1784.00 Sq.k.m.
2. Fambonghlo Wildlife Sanctuary 51.76 Sq.k.m.
3. Kyongnosla Alpine Sanctuary 31.00 Sq.k.m.
4. Moinam Wildlife Sanctuary 34.35 Sq.k.m.
5. Shingba Rhododendron Sanctuary 43.00 Sq.k.m.
6. Barsey Rhododendron Sanctuary 104.00 Sq.k..m

Utilization Circle

This is the commercial circle of the department. Extraction of Wind-fallen Trees, trees from project sites where forest land is diverted to the user agencies, extraction of poles from thinning of old plantations and conversion into timber, firewood and charcoal and sale of these foresdt produce is done by this Circle. The IWDP Division under the Utilization Circle implements the Integrate Afforestation and Eco-Development Project in Rangpuchu Watershed in theEast District..

Working Plan Circle

This is created to prepare Working Plans for all the four district of the State incorporating all the aspects of the scientific management of the natural as well as plantation forests of the state. This Circle is in the advanced stage of

writing the Working Plan for Sikkim for the next 10-20 years. The NFTP Division of this circle implements the 100%CS Scheme of Non-Timber Forest Produce including Medicinal plants in the state.

Forest Conservation Act, 1980 Cell

This Circle mainly functions to obtain clearance of projects under Forest (Conservation) Act, 1980. Realization of the Crop Compensation and the amount of money for compensatory afforestation is done by this Circle.

Ecology and Environment Circle

Treatment of the Catchment Area of Rangit Hydroelectric Project in South and West Districts. Monitoring of Environment and Pollution of air and water Wetland Conservation, Eco-Development of Urban Areas, treatment of catchment areas of rural water supply, maintenance of Jawaharlal Nehru Botanical Garden, Pinatum, Arboratum and Germ Plasm Bank etc. is done by this Circle.

Research Education and Extension Circle

This Circle is in charge of all the research oriented activities related to Forestry wildlife preservation, seed development etc. This circle operates the Centrally sponsored scheme of Seed Development which includes the seed testing laboratory and the mist chamber.

Himalayan Zoological Park Circle

The Himalayan Zoological Park is established at Bulbuley which is about Kilometres from the main town of Gangtok for the purpose of providing recreation and education need of the local people as well as the visiting tourists in ex-situ conservation of wildlife. This zoological park provides the natural habitat to the animals. Currently, this park harbours the following animals:

- Himalayan Black Bear.
- Red Panda
- Goral
- Barking Deer.
- Wolves.
- Clouded Leopards.
- Civet Cats/
- Monkeys.
- Monal Pheasant etc.

Planning and Administration Circle.

The principal role of this circle is to assist the principal CCF-cum-Secretary.In all matters related to policy to policy matters, planning the activities to be undertaken by the department, monitoring the progress of the schemes being implemented by different circles and reporting the progress of the state as well as central governments. This circle also deal with the works of management of IFS and SFS cadres, training of IFS and SFS officers, inter as well as intradepartmental meetings. Reply to Parliament Questions, Cases of the Department in the Supreme Court and Co-ordination with the different Ministries in the Government of Indea, Planning Commission, preparation of Five Year Plan and Annual Plans etc. is being taken care of by this Circle.

Sericulture Directorate

The Sericulture Directorate is responsible for development of Sericulture in Sikkim. Till the end of the Eighth Five Year Plan, the activities of sericulture were at low profile but has picked up pace from the beginning of the Ninth Five Year Plan. The state government has approved the project for Rs.5.00 crore for " Development and Extension of Sericulture in Sikkim" in the Ninth Five Year Plan. Although the activities are currently confined to the three districts viz. East, South and west, suitable areas of North District also will be taken in the later stage of the project. 115 villages and 1300 families have been earmarked to be covered during the project period of five years. The Central Board has also agreed to provide financial assistance for training of sericulture farmers and for infrastructure development of the project. The directorate is maintaining three sericulture farms, one each in East, South and West District. The main objectives of the Sericulture Directorate are:

- Rearing of improved variety of silkworms.
- Propagation of Mulbery seedlings
- Distribution of the seedlings to the villagers.
- Providing training, financial assistance, infrastructure and other inputs for silkworm cultivation in the state.
- Organising awareness camps in the villages.

Training for silkworm cultivation was provided to 12 farmers in the year 1997-98 and to 80 farmers in 1998-99. Each of the farmer (beneficiary) was given (i) Stipend Rs.500/- with free fooding and lodging, (ii)Rs.5,000/- for low cost rearing house, (iv)Rs.550 for weeding and manuring, (v) Dala & Chandraki worth Rs3000/- (vi) subsidy in mulberry saplings Rs.3000/-. Hence each beneficiary was provided with Rs.13,300/- in cash and in kind. The 12 beneficiaries 1997-98 and the 80 beneficiaries of 1998-99 who adopted sericulture farming, have started earning from silkworm cocoons produced by them. The department purchased cocoons worth Rs.11,828/- from the 12 beneficiaries adoptedd in

the year 1997-98. In the year 1998-99, Rs.44,332/-was realised from the beneficiaries being cost of saplings at subdised rates.

Directorate of Fisheries

The Directorate of Fisheries is one of the Direcrorate under Forests,Environment and Wildlife Department. The main objectives of this directorate are:

- Conservation and propagation of inland fishes.
- Production and distribution of fish seeds to the farmers interested in pisciculture.
- Providing financial assistance and loans to the farmers for fish cultivation under Fish Farmers Development Agency.
- Conservation and propagation of Mahaseer in the main rivers of the state.
- Propagation of Trout in Menmoitso and release the fillings in the fresh water lakes in high altitudes etc.

AFFORESTATION WORK

Afforestation was the major activity of the department. Over 8,000 Hectares of forest as well as non-forest land was covered by plantation during the year 1998-99. Afforestation work carried by different circles/wings of the Departmnent are as follows.

Sl. No.	Name of Circle/Scheme	Area Covered in Ha.
1.	Territorial Circle	200
2.	Social Forestry Circle (through the respective Zilla Panchayat	400
3.	Land use Circle	102
4.	Environment and Pollution Control	20
5	Sericulture	32
6.	Srimitivan Bulbuley, Gangtok	4
7.	Catchment Area Treatment of Rangit Hydro-Electric Project	2262
8.	Eco-Development in Fambonghlo Wildlife Sanctuary	42
9.	Integrated Wastelands Development Project in Rongni Chu Watershed	667
10.	Compensatory Afforestation	18
11.	Integrated Afforestation and Eco-Development Project in Rangpochu Watershed	1900
12.	Integrated Afforestation and Eco-Development Project in Dzongu Watershed	790
13.	Non-Timber Forest Produce inuding Medicinal plants	790
	Total	**7537**

Apart from the above, afforestation work of over 500 was also carried out by different Schools, non-government organizations, panchayats during World Environment Day, Vanamotsava. A substantial area of fallow land of individual farmers was also covered in all the four districts by the villagers by planting seedlings of fodder, fuelwood and timber for their bonafide use.

NURSERIES

Forests, Environment and Wildlife Department has been maintaining about 205 Hectares of nurseries all over the state to meet the seedling requirements of seedlings for distribution to public and other agencies. The annual production of seedlings in these nurseries is over 100 lakhs. Details of nurseries managed by different Circles/Divisions and their distribution districts is as follows.

Sl. No	CIRCLE	DIVISION	Total No. of Nurseries	Area in Ha.	No. of Labs Engaged
1	Territorial	North	5	16.39	80
		East	11	18.20	93
		South	5	8.20	44
		West	12	13.50	70
		Sub Total	33	56.29	287
2	Social Forestry	North	8	12.75	57
		East	14	19.20	97
		South	6	9.00	44
		West	10	8.00	48
		Sub Total	38	49.25	246
3	Landuse	North	6	10.00	50
		East	5	12.10	61
		South	8	15.00	77
		West	7	19.00	95
		Sub Total	26	46.10	233
4	Ecology & Environment	E.P.C.	2	2.00	11
		R.V.P.	14	19.40	106
		Sub Total	16	21.40	117
5	Utilization	I.W.D.P.	6	9.80	54
6	Working Plan	N.T.F.P.	8	9.00	46
7	Wildlife	K.N.P.	1	2.50	12
8	Research	Silviculture	2	1.20	33
	Total		**130**	**205.24**	1,078

Source: Forests, Environment and Wildlife Department, Government of Sikkim.

BUDGET ALLOCATION OF FORESTS, ENVIRONMENT AND WILDLIFE DEPARTMENT FOR THE YEAR 1998-99

Demand No. 39, -Forestry and Wildlife.
Major Head:2406 Forestry & Wildlife

	State Plan	Rupees in Lakhs
(1)	Direction & Administration	153.75
(2)	Silviculture Research	50.00
(3)	Development & Operation (working plan)	4.00
(4)	Botanical Survey	0.50
(5)	Demarcation Survey	5.00
(6)	Working plan Survey	1.00
(7)	Planning and Statistics	14.50
(8)	Forest Protection	3.50
(9)	Biosphere Reserve	1.00
(10)	Biodiversity Hot Spot Conservation	0.50
(11)	Sericulture	12.00
(12)	Aesthetic Forestry	8.50
(13)	State Plan Share of Area Oriented Fuelwood and Fodder Project(50:50CSS	68.52
(14)	Rhododendron Test Garden	0.50
(15)	Greening of ecologically fragile forest areas	35.00
(16)	Rehabilitation of Fire Damaged and Degraded Forest Areas.	24.00

(17)	Regeneration of Conifer Forests	3.00
(18)	Compensatory Afforestation	26.62
(19)	Plantation of Medicinal Plants and Herbs	0.30
(20)	Logging	1.00
(21)	Training and Extension	7.50
(22)	Direction and Administration of Wildlife Circle	56.50
(23)	Propagation and Conservation of Wildlife Products	5.00
(24)	Development of Other Sanctuaries	6.00
(25)	Development of Himalayan Zoological Park Major Head 4406-Capital Outlay on Forestry and Wildlife	35.00
(26)	Communication	1.00
(27)	Building	10.00
	Sub-Total	492.89

- Out of Rs.492.89 lakhs,Rs.26.62 lakhs is the amount realised from the user agencies for compensatory afforestation under Forest (Conservation) Act, 1980 against forest land diverted for different projects.

Centrally Sponsored Schemes.

Sl.no	Name of Scheme	Sponsoring Agency	Amount Rs. In Lakhs
1	Seed Developmnt	Ministry of Env.& Forests	9.65
2	50%Central Share of fuelwood plantation	do	68.52
3	Non-Timber Forest Produce Including Medicinal Plants	do	92.30
4	Development of Moinam Wildlife Sanctuary	do	4.00
5	Development of Shingba Rhododendron Sanctuary	do	1.53
6	Development of Kanchandzonga National Park	do	12.51
7	Assistance from Zoo Authority of India	Zoo Authority of India	8.87
8	Integrated Afforestation and Eco-Development Project in Rangpochu Watershed	Ministry of Env.& Forests	207.00
9	Integrated Afforestation and Eco-Development Project in Dzongu Watershed	do	84.17
10	Integrated Wastelands Development Project in Rongnichu Watershed	Ministry of Rural Development	35.00
11	Integrated Wastelands Development Project in Naga-Kazor Watershed	do	6.96
12	Integrated Wastelands Development Project in Turung Namthang Watershed	Ministry of Rural Development	13.74
13	Integrated Wastelands Development Project in Ringyang-Ramvang Watershed	do	20.82
14	Swarna Jayanti Kunj Plantation	do	0.45
		Sub-Total	565.61
	*The Scheme was transferred to the Zilla Panchayat, West District in 1999-2000		
	Total State Plan		492.88
	Total CSS		565.61
	Total Under Forestry and Wildlife		1,058.50

Demand No.35: Soil and Water Conservation.

Major Head: 2402 Soil and Water Conservation		
1.	Direction and Administration	36.00
2.	Soil Conservation in Watershed Areas	92.00
3.	Soil Conservation in other Areas	6.14
4.	Water Conservation of Perennial Sources	3.86
5.	Strengthening of State Landuse Board	2.00
Total under Soil & Water Conservation		**144.00**

Demand No.50: Other Scientific Research
Major Head: 3435 Ecology and Environment
State Plan

1.	Direction and Administration	23.00
2.	Environment Education Training & Extension	0.25
3.	Conservation Programmes	1.00
4.	Maintenance of J.N. Botanical Garden	0.75
5.	Prevention of Air & Water Pollution	1.00
	Sub-Total-State Plan	**26.00**

Centrally Sponsored Schemes

Sl. No	Name of Scheme	Sponsoring Agency	Amount Rs.in Lakhs
1	National Environment Awareness Campaign	Ministry of Env. & Forests	1.91
2	Setting up of Pollution Awareness & Assistance Booths	do	6.00
	Total CSS		**7.91**
	Total under Ecology and Environment		**33.91**
	Total Budgetry Provision(plan) under Forests, Environment & Wildlife Department		**1236.41**

STATEMENT OF REVENUE REALISED DURING THE YEAR 1998-99

Sl.No.	Department/offices		Amount
1	Roads and Bridges East & North	Rs.	12,79,870.00
2	Roads and Bridges South &West	Rs.	10,54,576.00
3	Buildings and Housing	Rs.	5,64,236.00
4	Public Health and Engineering	Rs.	29,387.00
5	Irrigation and Flood Control	Rs.	14,37,081.00
6	Rural Development Department East/North	Rs.	3,03,080.00
7	Rural Development Department South/West	Rs.	5,64,682.00
8	Education Department	Rs.	86,653.00
9	Power Department	Rs.	6,120.00
10	Health Department	Rs.	17,740.00
11	District Collector, South	Rs.	1,20,595.00
12	District Collector, West	Rs.	39,744.00
13	N.H.P.C.	Rs.	9,30,138.00
14	U.D. & H.D..	Rs.	3,49,522.00
15	Crop Compensation	Rs.	42,84,033.00
16	Landuse & Environment(Forest)	Rs.	3,21,730.00
17	Utilization Circle(Forest)	Rs.	1,78,020.00
18	D.F.O.(T) East	Rs.	27,99,503.00
19	D.F.O.(T) South	Rs.	3,68,803.00
20	D..F.O.(T) North	Rs.	86,182.00
21	D.F.O.(T) West	Rs.	2,21,477.00
22	Wildlife Circle (Forest)	Rs.	11,273.00
23	C.F. Territorial	Rs.	3,90,985.00
24	PCCF/Secretary's Office(Forest Headquarters)	Rs.	1,52,291.00
25.	Working Plan Circle(Forests)	Rs.	4,675.00
26	Social Forestry (East)	Rs.	3,729.00
	Total Revenue Realized during the Year1998-99	**Rs.**	**1,56,06,098.00**
	Target for the Year 1998-99	**Rs.**	**1,40,00,000.00**
	Revenue realized	**Rs.**	**1,56,06,098.00**
	Target Exceeded by	**Rs.**	**16,06,098.00**

TRAINING AND EXTENSION.

Refresher courses, short term trainings and compulsory trainings are being attended by the officers of this Department regularly. Apart from these trainings, the department has been organizing workshops, seminars and awareness programmes to educate the people about the importance of environment and forests, and their impact in sustainability of the living beings in this planet. Following are some of the programmes organized by Forests, Environment and Wildlife Department during the Year 1998-99

S.I. No	Description of Programme	Date/period	Venue
1.	State Programme of Environment (Smritivan Programme)	5th June 1999	Bulbuley, Gangtok
2.	Training on Joint Forest Management	10th February 1999	Conference Hall of Forest Secreteriat
3.	Training of Watershed Development Team for Implementation of the Watershed Development Programme	6th January 1999	-do-
4.	Training of User Groups and Self help Groups in Waterhed Management	14th and 15th December 1998	-do-
5.	Training of User Groups And Self help Groups for Watershed Management	28th December 1999	Chunthang PWD Dakbungalow
6.	Awareness Programmme on Watershed Management	7th Februnry 1999	Changey-Senti
7.	Awareness Programme on Watershed Management	16th February 1999	Aho Village

8.	Awareness Programme on Watershed Management	15th February 1999	Sichey Busty
9.	Training on PRA & RRA Excercise and Micro-Planning	November1998	Conference Hall of Forest Secretariat
10.	Training on PRA & RRA exercise and Micro-Planning	-do-	Rey-Mindo village
11.	Training on Microplanning On Joint Forest Management	29th November1999	Zilla Panchyat Bhawan Gyalshing
12.	Training on Microplanning On Joint Forest Management	30th November 1999	Lingchom village Gyalshing
13.	Training on Implementation Forest Acts and Rules	6th March 2000	Community Hall Namchi
14.	Training of Watershed Development Team for Implementation of Watershed Management Programme	9th March 2000	Conference Hall of Forest Secreteriat
15.	Forestry Research Seminar for setting up of Forest Research Priorities and State Forestry Research Plan For Sikkim	8th & 9th October 1998	Conference hall of Forest Secreteriat
16.	Environment Awareness Programme	December 1998	Through the State
17.	Awareness Programme on Implementation of Joint Forest Management	February 1999	Phadamchen Forest Rest House
18.	Environment Awareness Programme	1st December 1999 to 5th March 2000	Throughout the State by 39 NGOs
19.	Training of Sericulture Farmers		Sericulture Farm Rorathang East Sikkim

AFFORESTATION UNDER 20 POINT PROGRAMME

Afforestation, Natural Regeneration, Pasture Development (Fodder Plantation), Plantation, of Bamboo other Minor Forest Produce as well as Medicinal Plants is Being carried out by Forests, Environment and Wildlife Department regularly. Area under both forest as well as private lands covered under plantation during the last 30 years is given below.

Sl. No.	Period of Afforestation	Government land	Private Land	Total Area in Hectares
1	1971-80	7,463.00	1,317.00	8,780.00
2	1980-85	3,332.65	676.35	4,509.00
3	1985-86	1,666.25	558.75	2,235.00
4	1986-87	1,470.00	490.00	1,960.00
5	1987-88	1,511.25	503.75	2,015.00
6	1988-89	1,616.25	538.75	2,155.00
7	1989-90	1,852.50	617.50	2,470.00
8	1990-91	3,416.25	1,138.75	4,555.00
9	1991-92	4,622.47	1,580.82	6,163.29
10	1992-93	5,484.00	1,828.00	7,312.00
11	1993-94	5,786.70	1,928.90	7,715.60
12	1994-95	6,900.00	2,300.00	9,200.00
13	1995-96	7,189.50	2,398.50	9,586.00
14	1996-97	7,500.00	2,500.00	10,000.00
15	1997-98	6,356.56	2,610.30	9,966.86
16	1998-99	7,537.00	500.00	8,037.00
	Total	**73,271.82**	**20,713.07**	**93984.89**

NO. OF LITERATE PERSON BY SEX						
Male	No.	8690	58672	26923	22941	117226
Female	No.	4565	37607	16332	13211	71714
Total	No.	13255	96279	43254	36152	188940
LITERACY BY SEX						
Male	%	63.64	73.10	63.18	54.92	65.74
Female	%	40.69	55.66	43.7	35.26	46.69
Total	%	53.47	65.13	54.08	45.62	56.94
S.T. Population	No.	17301	37632	16670	19297	90901
%age of S.T. Population	%	55.38	21.09	16.91	19.66	22.36
S.C. Population	No.	1111	12482	5564	4927	24084
%ageofS.C. Population	%	0.35	6.99	5.64	5.02	5.93
Total Workers	No.	13786	68717	42187	44.31	168721
%age of Workers	%	44.13	38.51	42.78	44.86	41.51

PROJECTED POPULATION(in 000)						
Years	2001	2002	2003	2004	2005	2006
Male	299	307	315	323	331	338
Female	277	286	295	304	312	321
Total Population	576	593	610	627	643	659

Sikkim' s contribution to India's Billion Plus

The provisional population totals released by the Director, Census Operations on 27th March 2001 puts Sikkim's current population at 5,40,493, up 32.98 per cent from last time(1991). The national decadal growth rate stands at 21.34 per cent.

Among the districts, East recorded the highest growth at 37.17 per cent with South and North recording 33.37 and 31.32 per cents respectively. Sikkim recorded its highest decadal growth between 1971-81 when the population increased by 50.77 %. Interestingly, the decade between 1911-21 recorded a negative growth rate of –7.05%. Experts believe this to be the result of an Influenza epidemic that had struck the then Himalayan Kingdom.

Another interesting aspect revealed in the provisional population totals is the sex ratio which has gone down progressively for Sikkim. The latest figures show 875 females per thousand males, down slightly from 1981-91's 878. The Director mentioned that the dip in sex ration is mainly because of the increase in the number of migrant labour in the state.

The sex ratio in North district is 752, down from 1981-91's 828. West, boasts by far the healthiest sex ratio of 930 females per thousand males.

While commenting on the problems faced by the enumerators in Sikkim, the Director stated that while most Sikkimese were helpful, the enumerators did face some problems due to the large number of nuclear families in the urban areas. Such confusion arose primarily from the " confusing demarcation of boundaries (rural-urban)" in Sikkim.

Table A1-Population and number of households (1991)

District	Total/ Rural/ Urban	Population			Number of Households
		Persons	Males	Females	
Sikkim	Total/	406,457	216,457	19,030	76,329
	Rural/	369,451	195,277	174,174	69,213
	Urban/	37,006	21,150	15,856	7,116
North District	Total/	31,240	17,090	14,150	6,658
	Rural/	30,437	16,582	13,855	6,489
	Urban	803	508	295	169
East District	Total/	178,452	95,986	82,466	34,241
	Rural/	146,580	77,862	68,718	28,085
	Urban	31,872	18,124	13,748	6,156
South District	Total/	98,604	52,105	46,499	17,924
	Rural/	96,035	50,588	45,447	17,441
	Urban	2,569	1,517	1,052	483
West District	Total/	98,161	51,246	46,915	17,506
	Rural/	96,399	50,245	46,154	17,198
	Urban	1,762	1,001	761	308

Source:"Sikkim State District Profile,1991", Census of India,1991, Government of India

Table A2-Decennial change of population at District level (1971-91)

District	Population	Absolute increase	Percentile increase	Annual growth rate
North				
1971	13,014			
1981	26,455	13,441	103.28	7.35
1991	31,240	1,485	18.09	1.68
East				
1971	85,621			
1981	138,762	53,141	62.07	4.95
1991	178,452	39,690	28.60	2.55
South				
1971	53,185			
1981	75,976	22,791	42.85	3.63
1991	98,602	22,628	29.78	2.64
West				
1971	58,023			
1981	75,192	17,169	29.59	2.63
1991	98,161	22,969	30.55	2.70

Sources.(a) Registrar General of India (1981)"Census of India, 1981, Series 19, Sikkim Part III,A&B, Government of India.(b) Registrar General of India(1991) 'Census of India,1991,Series 22,Sikkim Part XII-A&B District Census Handbook",Government of India.

Table A3-Area, number of tahsils, towns and villages(1991)

District	Total area (in Sq.k.m.)	Number of Sub-divisions	Number of Towns	Total	Inhabited	Uninhabited
Sikkim	7,096	8	8	453	447	6
North District	4,226	2	1	53	53	-
East District	954	2	3	134	130	4
South District	759	2	2	145	144	1
West District	1,166	2	2	121	120	1

Source: "Sikkim State District Profile, 1991, Government of India.

Table A4-Distributionof Population by age and Sex(1991)

Total/ rural/ Urban	Sex	Total Population (in'000s)	%population in the age group						
			0-4	5-9	10-14	15-44	45-59	60-79	80+
Total	Persons	406	12.6	13.5	13.0	46.1	8.8	4.1	0.4
	Males	216	12.1	12.7	12.5	46.6	9.9	1.5	0.4
	Females	190	13.3	14.5	13.6	45.6	7.6	3.8	0.4
Rural	Persons	369	13.0	13.8	13.1	45.2	8.9	4.3	0.4
	Males	195	12.5	13.0	12.7	45.4	10.0	4.7	0.4
	Females	174	13.5	14.7	13.6	45.0	7.7	3.9	0.4
Urban	Persons	37	9.4	10.9	12.1	55.3	7.7	2.7	0.3
	Males	21	836.0	9.7	11.2	57.2	8.7	2.8	0.3
	Females	16	10.5	12.6	13.2	52.7	6.4	2.7	0.3

Source: "Sikkim State District Profile, 1991", Census of India, 1991, Government

Source: Directorate of Economics, Statistics, Monitoring & Evaluation Planning & Development Dept. Govt. of Sikkim, Gangtok.

HEALTH (As on 31st March 2000)

Particulars	Unit	North	East	South	West	State
Hospitals (Inc. Manipal)	No.	1	3	1	1	6
PHC	"	3	8	6	7	24
PHCS	"	19	48	39	41	147
Beds (in position) (excluding Manipal)	"	80	500	220	120	920
Dotors in position (excluding Manipal)	"	14	133	29	20	196
Auxillary Nurses & Mid Wives (in position) (excluding Manipal)	"	26	194	92	68	380
Staff Nurses (excluding Manipal)	"	3	102	10	6	121
Paients treated indoor (excluding Manipal)	"	1,692	10,453	4,271	3,968	20,384
Patients treated outdoor (excluding Manipal)	"	15,511	196,455	86,328	76,352	374,646
Patient reffered Outside Silkkim for Treatment	"	-	838	-	-	838
Population per Doctor (Inc. STNM Hospital)	"	2,888	17,326	4,401	6,305	2,679
Private Clinic & Doctors	"	-	12	4	1	17
Private Pathologies & Diagnostic Centres	"	-	5	2	1	8

Source-Deptt. Of Health and Family Welfare

VITAL STATISTICS (CIVIL REGISTRATION SYSTEM) FOR THE YEAR 1997 TO 1999

Particulars	Unit	North	East	South	West	State
Registration C	No.	4	13	7	8	32
LIVE BIRTH REGISTERED						
Current	No.	1640	9912	5069	4600	21221
Delayed	"	2345	19973	12039	11000	45357
Total	"	3985	29885	17108	15600	66578
DEATH REGISTERED						
Adult	No.	219	1194	591	636	2640
Infant	"	18	77	46	20	161
Total	"	137	1271	637	656	2801

Source:S.R.S. Bulletin April,.2000)

BIRTHS,DEATHS AND INFANT MORTALITY RATES

	SIKKIM			INDIA		
YEAR	BR	DR	IMR	BR	DR	IMR
1981	31.00	8.90	N.A.	33.90	12.50	N.A.
1985	33.10	10.70	N.A.	32.90	11.80	N.A.
1991	22.50	7.50	46	29.50	9.80	80
1995	22.50	6.90	45	28.30	9.00	72
1998	20.90	6.1	52	26.5	9.00	72

Source: Deptt. Of Health And Family Welfare/Birth & Death

POWER (As on 31st March 2000)

Particulars	Unit	North	East	South	West	State
Hydel Project (operation)	No.	3	4	-	5	12
Hydel Project under const.	No.	1	1(Ne)	-	-	2
Installed Capacity	MW					
(a) Hydel Project	MW	4.30	24.90	-	3.80	33.00
(b) Diesel Generator	MW	-	5	-	-	5
Power Generated	MKWH					
(a) Hydel Generation	MKWH	8.81	37.65	2.12	-	48.58
(b) Diesel Generation	MKWH	-	5.42	-	-	5.42
Town electrified	%				-	100%
Block (Revenue) Electrified	%				-	100%

Source: Power Department.

RELIGIOUS INSTITUTIONS (As on 31st March 2000)

Particulars	Unit	North	East	South	West	State
Monastries	No.	21	29	23	15	88
Temples	No.	16	77	51	47	191
Mosques	No.	-	3	2	1	6
Churches	No.	1	13	10	6	30
Mani Chakangs	No.	47	46	28	38	159
Chakangs and Tsamkhangs	No.	6	13	7	6	32
Guru Dwara	No.	1	1	-	-	2
Sai Baba mandir	No.	-	1	-	-	1

Source: Dept. of Ecclesiastical Affairs.

FISHERIES (As on 30st March 2000)

Particulars	Unit	North	East	South	West	State
Fish Prod	Tonnes	30	40	30	40	140
Fish Seed Production	Million	0.40	0.75	0.35	1.00	2.50
Fish Seed Farms	No.					
		1996-97	**1997-98**	**1998-99**	**1999-2000**	
Quantity Sold	Tonnes	150	140	140	140	
Revenue Earned	Rs. In Lakhs	0.61	0.48	0.48	0.76	

Source: Fisheries Wing

INDUSTRIES (As on 31st March 2000)

Particulars	Unit	North	East	South	West	State
Provisionally Registered	No.	25	244	51	66	386
SMALL SCALE	UNIT	6	256	54	31	367
Cottage Industries	No.	1	19	6	10	36
Medium Scale Industries	No.	-	3	-	-	3
PSUs	No.	-	3	-	-	3
Joint Sector Underaking	No.					
Non-functioning units	No.	3	65	10	9	87

Source: Deptt. Of Industries.

EXCISE (As on 31st March 2000)

Particulars	Unit	North	East	South	West	State
Country Liquor Shop	No.	10	16	10	10	46
Foreign Liquor Shop	"	31	216	68	67	382
Bar Shop	"	23	181	60	58	292
Kutcha Gaddi Shop	"	14	60	32	23	292
Illicit Distribution	"	12	42	29	9	192
NO. of Cases reported	"	12	42	29	9	92
No. of Cases prosecuted	"		12	42	29	92
Total Revenue Earned		1997-98		1998-99		1999-00
	Rs. In Crores	10.71		11.71		13.19

Source: Excise Department

CO-OPERATION (As on 31sr March 2000)

Particulars	Unit	North	East	South	West	State
M.P.C.S.	No.	5	18	27	23	73
C.C.S.	No.	11	58	23	26	118
Number of Milk PCS	"	1	36	25	39	101
Dairy Milk Procurement	LPD		2,380.00	2853.00(s/w)	5,233.00	
Membership of all Co-operative Societies	"	2014	11987	10746	10409	35166

WORKING CAPITAL (As on 31st March 1999-2000)

(I) M.P.C.S.	RS. In lakhs	8.71	23.39	23.911	16.07	72.08
(ii) Milk Producers Co-Operative Societies	"	-	7	1.59	17.05	25.64

Source: Co-operation Deptt & M.P.C.S.

AGRICULTURE

Particulars	North	East	South	West	State
Area under Principal Crops during 1999-2000(in 000 Hectares)					
Maize	3.0930	9.7000	13.3000	13.3000	39.3930
Rice	1.4086	6.7200	2.4000	5.3800	15.9086
Wheat	1.0400	2.5500	1.9600	2.5500	8.1000
Barley	0.1500	0.3400	0.2000	0.4500	1.1400
Pulses	0.8000	1.7400	2.3500	2.5400	6.7100

Estimated production of Principal Crops In 000 Tonnes during

		1997-98	1998-99	1999-2000
Maize	North	4.4400	2.2308	4.1614
	East	14.1200	15.4500	13.4730
	South	18.0500	16.6200	17.0000
	West	19.1000	18.5000	18.2000
	State	55.7100	50.8008	52.8344
Rice	North	1.6271	1.9170	2.0593
	East	9.1000	9.2900	0.9500
	South	3.2700	3.2700	3.4300
	West	7.4500	7.4800	8.0000
	State	21.4471	21.9570	23.4393
Wheat	North	1.3460	0.8262	1.6498
	East	5.1000	2.3700	4.3100
	South	3.0600	1.0200	2.5900
	West	4.6940	2.2000	4.3000
	State	14.2000	6.4162	12.8408
Barley	North	0.2070	0.2070	0.2070
	East	0.5000	0.2700	0.5000
	South	0.1800	0.1400	0.3000
	West	0.6230	0.6000	0.6700
	State	1.5100	1.2170	1.6770
Pulses	North	0.0700	0.0657	0.0661
	East	1.5500	1,058.0000	1.5500
	South	2.0200	1,067.0000	2.0500
	West	2.3100	2.2800	2.2800
	State	5.9500	5.5970	5.9461

Source: Agriculture Department.

LAND HOLDINGS (AGRI CENSUS 1990-91)

Particulars	Unit	North	East	South	West	State
Operational Holding	No.	5124	20271	12854	1448	52967
Area operated	Hectare	15444	34450	29336	32072	111302
Average Area per Holding	"	3.01	1.70	2.22	2.28	2.11

Source: Agriculture Census 1990-91

VETERINARY SERVICES

Particulars	Unit	North	East	South	West	State
Veterinary Hospitals	No.	3	4	2	3	12
Veterinary Dispensaries	No.	4	8	6	5	23
Stockman Centres	No.	9	16	15	16	56
Veterinary Doctors	No.	6	35	9	17	67
Animal Husbandry	No.					
Animal Vaccinated	No.					17294
CENSUS OF LIVESTOCK& POPULATION(1998 -						
(as per the 16th A.I.O. Livestock Census,1997-NIC)						
Cattle	No.	12841	50431	37250	42502	143024
Buffalo	No.	66	323	270	1134	1970
Sheep	No.	2325	316	605	1777	5023
Goat	No.	8375	24375	25469	24719	82938
Yak	No.	2167	1751	-	8366	4781
Horses	No.	-	-	-	-	-
Ponies	No.	1322	1087	755	75316	5436
Pigs	No.	3135	8784	6690	4750	26975
Donkeys & Mules	No.	21	98	2	131	121
Poultry	No.	22023	66066	58001		221403
Dog	No.	1142	11856	5810		23558
Rabbit	No.	54	117	55		357

Source: Department of A.H. and Vet Services

IRRIGATION (As on 31st March 2000)

Particulars	Unit	Year	North	East	South	West	State
No. of minor irrigation channels	No.	1997-98	15	32	11	7	9
Operational	No.	"	14	31	10	7	9
Non-operational	No.	"	1	1	1	-	-
Potential created	Ha	"	2892	9924	6616	8961	28689
Potential utilised	Ha	"	2189	6869	4921	6088	20236
Total							
No. of minor irrigation channels	No.	1998-99	-	7	2	-	10
Operational	No.	"	-	7	2	-	10
Non-operational	No.	"	-	-	-	-	-
Potential created	Ha	"	2982	9975	6771	8961	28864
Potential utilised	Ha	"	2189	6914	5045	6088	20376
Total							
No. of minor irrigation channels	No.	1999-00	-	3	5	2	10
Operational	No.	"	-	3	5	2	10
Non-operational	No.	"	-	-	-	-	-
Potential created	Ha	"	2982	9991	6905	8986	28864
Potential Utilised	Ha	"	2189	6927	5152	6108	20376

Source : Irrigation & Flood Control

COMMUNICATION (As on 31st March 2000)

Particulars	Unit	North	East	South	West	State
Telephone Exchange (AI Electronics)	No.	4	14	8	10	36
Telephone in Use (operational)	"	834	13892	2790	2131	19737
Facility of Telephone in Village/Gram Panchayats						

	"	46	56	91	94	287
STD/ISD/PCO	"	4	197	27	21	249
EPABX	"	-	37	1	1	39
PABX	"	-	2	-	-	2
FAX	"	-	65	3	2	70
Telegraph Office	"	-	1	-	1	2
Combined Office	"	1	2	1	1	5
Post Office	"					
Sub Post Office	"	1	13	2	3	19
Branch Post Office	"	17	89	27	46	179
Public Call Office	"	1	2	1	1	5
Combined Office	"	1	2	1	1	5
Head Post Office	"	-	1	-	-	1
E\xtra Departmental Sub-Office	"	4	2	-	-	6

BANKING (As on 31st March 2000)						
PUBLIC SECTOR BANKS						
Particulars	Unit	North	East	South	West	State
Rural	No.	6	13	8	8	35
Urban	"	-	10	-	-	10
Total Deposits Rs.in Lakhs						
Rural						
(i) Private individuals	Rs in Lakhs	994	6465	3139	2508	13106
(ii) Institutions	Rs in Lakhs					
Urban						
(i) Private individuals	Rs in Lakhs					
(ii) Institutions	Rs in Lakhs	-	29932	-	-	29932
Total Advances						
(i) Small & Marginal Farmers	Rs in Lakhs	94	251	18	62	425
(ii) Small Scale Industrial Units	"	4	498	16	34	552
(iii) Others	"	201	1639	409	301	2550
STATE BANK OF SIKKIM						
Rural	No.	1	3	1	2	7
Urban	"	1	7	4	3	15
Total	"	2	10	5	5	22
Total Deposit	Rs in Crores	0.78	127.59	8.71	4.83	141.91
RURAL						
(i)Private Individuals	RS in Crores					
(ii) Institutions	"					
URBAN						
(i) Private Individuals	"					
(ii) Institutions	"					
Total Advances	"	0.91	7.88	3.51	2.75	15.05
(i) Small & Marginal Farmers						
(ii) Small Scale Industrial Units						
(iii) Others						
Net Profit	Year	1997-98		1998-99		1999-00

(Rs. In Crores)		2.62		4.54		3.85
						Source: Lead Banks and S.B.S.

BUDGETED EXPENDITURE				
Particulars	Unit	1997-98	1998-99	1999-2000
Plan	Rs. In Lakhs	22000.00	19383.00	25000.00
Non-Plan	"	103444.05	137094.17	139260.67
Total	"	125444.05	156477.17	162460.67
				Source: Finance Department.

STATE ANNUAL PLAN (SECTORWISE)				
Particulars	Unit	1998-99	1999-2000	2000-2001
Agriculture & Allied Services	Rs. In (000)	1,31,900	1,35,800	1,97,000
Rural Development.	"	77,2000	77,200	95,500
Irrigation & Flood Control	"	42,700	34,200	2,86,200
Power	"	3,27,100	3,69,200	3,42,.900
Industry & Minerals	"	56,200	3,41,200	52,300
Transport	"	16,700	16,700	15,000
Other Scientific Research	"	5,600	8,400	9,600
Social Services	"	3,70,310	6,60,610	6.95,660
Other Services	"	9,61,752	9,10,341	8,48,840
Total	"	19,89,462	25,53,651	25,43,000

TRANSPORT STATISTICS				
Particulars	Unit	1997-98	1998-99	1999-2000
FLEET STRENGTH OF SNT				
Buses	No.	155	145	138
Trucks & Tankers	"	150	153	133
Passengers Carried	No. in Lakhs	12.03	17.54	11.41
REVENUE EARNED BY				
(i) Buses	Rs. in Lakhs	177.40	136.0	153.94
(ii) Trucks & Tankers	Rs. In Lakhs	692.46	449.55	591.08
Goods Carried	In.M.T.	192.35	124.87	119.32
Total Route				
Length (covered)	Km	47.47	46.85	43.13
(Schedule Route)	No.	67	67	67
OTHER REGISTERED VEHICLES				
(a) Taxis	No.			
(i) Buses	No.	298	302	313
(ii) Jeeps	No.	1299	1600	2001
(iii) Maruti Car & Van	No.	1284	1449	1680
(iv) Other Cars	No.			
(v) Trucks	No.	968	1025	1206
(vi) Govt. Vehicles	No.	837	897	933
(b) Govt. Vehicles	No.	5657	6133	6462
(c) Private Vehicles	No.	3599	3925	4047
(d) Two Wheelers	No.	N.A.	N.A.	N.A.
(e) Road Roller	No.	N.A.	N.A.	N.A.
(f) Bull Dodger	No.	N.A.	N.A.	N.A.
				Source: Transport Department

Financial Institutions of the State Government

SIDICO and SABCCO are two financial institutions of the state government. The former is concerned with promoting small-scale industrial development in the state and the latter with providing subsidized financial support to backward classes for undertaking income-generating activities.

However, over the years poor Loan disbursement practices, inadequate monitoring, inadequate technical and managerial support to borrowers and not infrequently outright political non-performing loans with a very narrow client make these institutions much more dynamic and relevant in the development process. They are now seeking to establish a working partnership with NGO's and SHG's. This they feel is necessary to significantly increase and broaden the client base, to enhance proper screening and monitoring of applicants and to be able to provide technical and managerial support at the grass root level.

ROLE OF NGO'S AS PARTNERS OF FINANCIAL INSTITUTIONS IN SIKKIM

Sponsored by SIDICO/SABACO- Government of Sikkim, Gangtok
Organised by Voluntary Health Association of Sikkim and Sikkim Development Foundation, Gangtok.
Venue:- Hotel Rendezvous, Gangtok.
Date: 7th Jan. 2000.

The participants of various NGO's officials of Central Govt. institutions, officials of Sikkim Development Investment Corporation/Sikkim All Backward Class Corporation(a Govt. of Sikkim undertakin) and officials of various financial institutions, mainly NABARD, RGBN, SIDBI arrived for the meeting at Hotel Rendezvous.

SABACO is a joint undertakin of the Central Govt. and the State Govt. with 50:50 % share in it. Mr. D.K. Gajmer, Managing Director on behalf of SABACO, Govt. of Sikkim emphasised that SIDICO and SABACO are desirous to take its activities to the real grass-root people through the NGO's.

Mr. Loday Chungyalpa, Secretary, Sikkim Development Foundation outlined the following points as regards the current NGO scenario in Sikkim.

- Hard to get information and to find out the number of NGO's working.
- Difficult to identify which NGO's are dormant or not.
- About1000 registered NGO's.
- Most of these are Societies, Clubs, Religious Institutions. However, financial organisations are very less.
- Many of them thriving on funds received from Govt. sources only.
- Developmental activities initiated by the NGO's has to go fast from the grass-root level.
- Some NGO's working exclusively on environment and Eco-Tourism and some on health.
- Only nine NGO's promoting Self Help Group (SHG)

Mr.Chungyalpa also highlighted some of the important points of the outcome of Martam NGO's meet held on 16th & 17th Nov. and summarised the same as follows:

National Foundation for India (NFI), New Delhi, a funding agency keen on supporting developmental process in Sikkim organised a workshop for delineating the Developmental Agenda of Sikkim and to identify the NFI's role in it. At the outset of the workshop, it was felt that the developmental documents and planning should come from the bottom and not the top. All the activities should ensure economic growth with social justice. In all the developmental planning grass-root people/representatives, NGO's Panchayats should be involved.

The strengths and weaknesses of the NGO's were listed as under by the various groups who took part in the meeting.

Weakness:

- Lack of professionals in this line of work.
- Inadequate information regarding funding agencies.
- Non prioritising towards the objectives.
- Capacity of financial/accounting recording to be improved
- Lack of efffective communication/information system.
- Lack of support from government/institutions.
- No proper orientation towards the long lasting sustainable projects.
- Lack of leadership and Co-operation from the members.
- Transparency.

Strengths:

Commitment, Sincerity and Dedication of NGO's and SHG members.

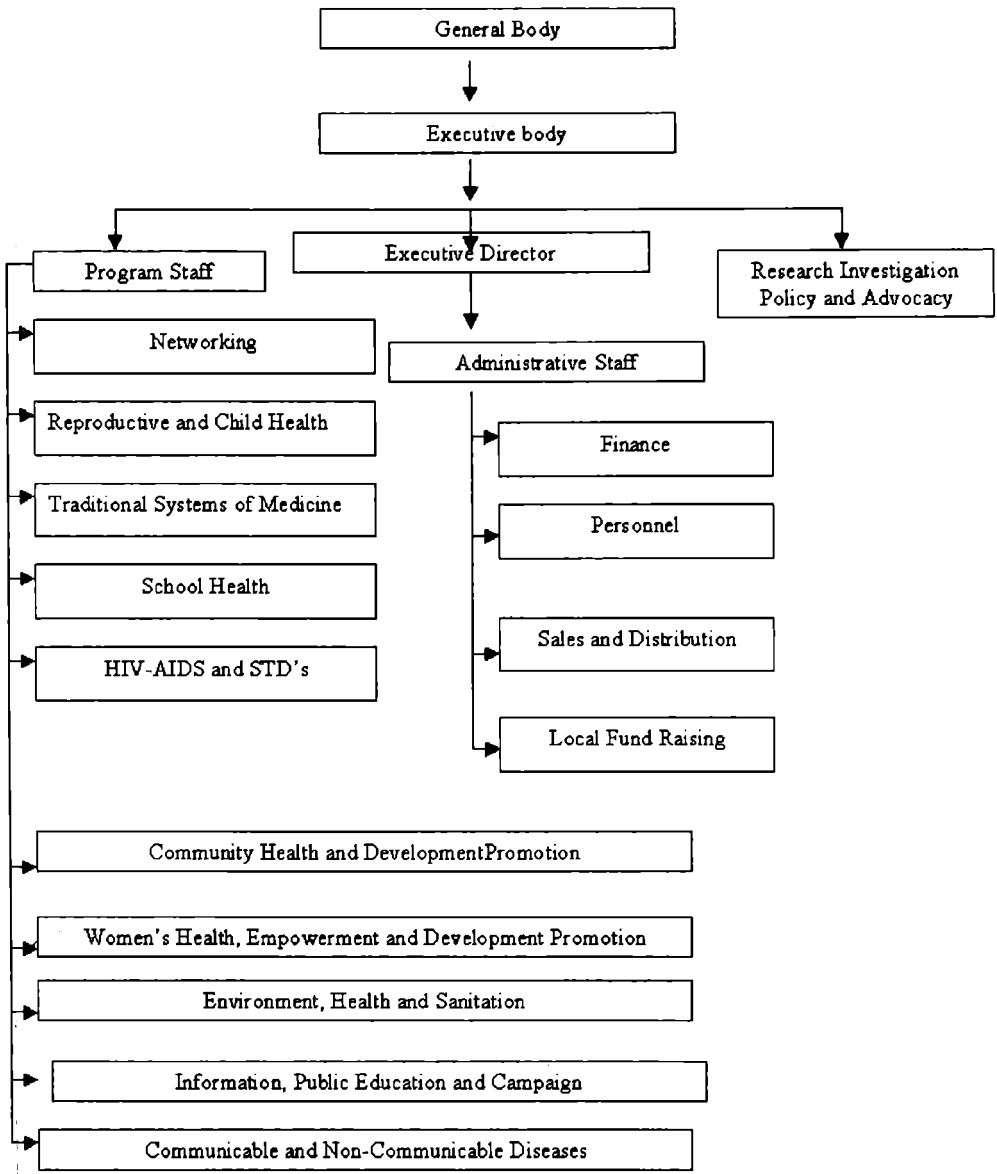
- Potential for growth.
- Keeness to take up economic activity.
- Co-operation from all village people including panchayats.
- Easy accessibility for the society and can reach out to larger people.
- Understanding the actual need of the targetted people.
- Good projects availaible.
- Setting up of a developmental oriented model to follow through Income Generating Programmes.
- Enlightened members.

Opportinuties:

- Exposure
- Networking.
- Counselling/Training.
- Micro village projects.
- Self sustainability income generating projects.
- Employment opportunities.
- Utilization of human resources.
- Innovation.
- Contribution to state building.
- The various threats to the NGO's perceived in the existing local situation were
- also outlined:
- Mis-management.
- Communalism.
- Lack of dedication.
- Social/Cultural constraints.
- Government interference.
- Communication gap.
- Vulnerability due to non-sustainibility/lack of credibility.
- Non-institutionalization of NGO's.

Source: Project Report made by VHA of Sikkim.

ORGANIZATIONAL STRUCTURE



VOLUNTARY HEALTH ASSOCIATION OF SIKKIM (VHA)

Sonam Gyatso Marg (Tibet Road)
Gangtok. P.O. Box 144.
Pin.-734101, Phone: (03592)-2605
Contact person: Dr. B.B.Rai.

Voluntary Health Association of Sikkim was established in 1977 with the basic philosophy and mission to promote the concept of community health and development. VHA of Sikkim is a State level federation of grass-root level Organistions of the Sikkim State. It is a federal member of the VHAI, New Delhi. It is a non-profit making registered organisation having a secular conmstitution with the aim of improving the health and quality of life of the people irrespective of caste, creed, sex, religion and culture.

The ultimate goal of the Association is 'making health a reality for the people of Sikkim', with the people's health movement in the state.

Main Objectives of the Association:

- Helping to create an atmosphere for building up a people's health and development movement through effective campaign and networking.

To promote low cost, appropriate, scientific and people oriented health and development programs in harmony with traditional knowledge and skills of various communities who comprise our multi-ethnic society.

- To provide technical or professional support and guidance to the member organisations.
- To strengthen voluntary initiatives in the state through formation and support of grass-root level organisations.
- To promote community health, development and human rights related to the provision and distribution of health services.

Staff Strength:

- Dr. B.B. Rai. Executive Director.
- Mr. P.C. Rai. Programme Officer.
- Mr. K.K. Sharma. Accountant.
- Ms. Leena Chettri, Office Secretary.
- Ms Donka Lepcha, Office Keeper (part time)
- Mr. Bhim Kumar Rai, Driver-cum-Attendant.
- Dr. Bela Cintury, RCH Consultant.
- Dr. H.Lepcha, President.

Dr. B.B. Rai states that the associations efforts have been in the areas of HIV-AIDS/STDs, RCH, Awareness Campaign, Networking and Village Meeting, Health Exhibition, School Health, Traditional Systems of Medicicne, Income Generation Activities though Self Help Group (SHG) promotion and Capacity Building of NGOs. He says "we are very much commited to expand our activity in other priority areas like Environment, Health and Sanitation, Women's Health, Empowerment and Development, Nutrition, Rational Drugs, Therapy and Consumer Education, Communicable and Non-Communicable diseases, Research, Investigations, Policy and Advocacy.

Their mission is to improve their own capascity in order to be able to make VHA of Sikkim an organisation that plays an ever-growing role in the State in the best professional manner. And because their organisation is also known as the 'Mother NGO' they believe that strengthening of VHA of Sikkim means strengthening of the member organisations as well as all the voluntary agencies working in the field of community health and development at grass-root level in Sikkim. However, the Programme Officer feels that if they could do away with some of the problem,s that they face such as transparency, lack of support from the State Govt. and inadequate information system, they will be able to achieve the objectives of their organisation completely.

The **Association for Social Health in India**, Sikkim Branch, situated in Development area, Gangtok was established in 1987 and was registered in the year 1990. The association is also known by the name 'Jagrit' which provides treatment, prohibition and counselling for substance abuse and alcoholism. The Association is running three main projects which have been briefly described below:-

(1)Treatment, Prohibition and Counselling Centre for Substance Abuse and Alcoholism was started in Jan. 1989 to combat the growing menace of drug abuse and social stigma of alcoholism. The activities taken up by the centre includes educative and preventive awareness programmes and patient treatment programmes. The patients are detoxoified on O.P.D. basis and chronic cases are referred to the S.T.N.M. hospital, Gangtok for hospitalization. Emphasis is laid on counselling and the follow -up work is conducted in the form of Home visits by the social workers of the association. This Centre is funded by the Ministry of Social Justice and Empowerment, Govt. of India, New Delhi.

(2) The Family Counselling Centre is the second project that the Association has undertaken. The centre was started on 1st June1993, and is located at Development Area, Gangtok. It caters to families involved in marital discord and disputes in interpersonal life. The family cases are registered at the Centre's office and all the registered cases are dealt in a confidential manner with no legal hassles involved.

(3) The Association has re-opened its Short Stay Home named 'Mamtalaya' located at Upper Sichey which will be accomodating 30 women inclusive of children for a short period. The Centre which was actually started in the year—— had to be closed down because of lack of funds. It was re-opened from Feb.2001 and lays down certain conditions for those in need in order to avail the facilities of the centre.

SIKKIM DEVELOPMENT FOUNDATION

Sikkim Development Foundation (SDF) is a non-profit, non-government, non-political and non-sectarian organisation with headquarters in Gangtok. It was established in 1999 by a group of citizens coming from different walks of life who got together to discuss the concerns they shared about the state of affairs in Sikkim. It is registered with the government of Sikkim, India under Serial No.1057 Volume No.1.

Mission.

SDF exists to improve the living standard and quality of life for the people of Sikkim, particularly for women, children, minorities, handicapped and other disadvantaged of marginalised sections of the society.

To realise this mission SDF will:

- Work towards creating a climate of freedom, equality, justice, peace, understanding and opportunity in the state.
- Promote environmentally and economically sustainable, self-reliant community development projects in the areas of institution building, health, education, agriculture, rural development, community infrastructure and micro-enterprise.
- Ensure that the projects reflect the needs and aspirations of the community and to elicit their participation and ownership of the projects.
- Work towards protecting and preserving the state's immensely rich bio-diverse environment and promote responsible tourism.
- Educate our youth on the detrimental effects of drugs, smoking, alcohol and AIDS to their health and society.
- Hold as well as attend ;seminars, workshops and conferences at regional, national and international levels to gain insights in new ideas and thoughts in the field of development.
- Raise funds from all legal sources from within the country and overseas to finance various projects.

SIKKIM DEVELOPMENT FOUNDATION

STRENGTHS	WEAKNESSES
▪ Strong leader in current Chairperson, Ex chief Secretary of State Government ▪ Committed, dedicated & relatively young team members. ▪ Members have wide and varied professional experiences. ▪ Genuine concern regarding development issues in the State. ▪ Strong links with NGO in Nepal-KEEP and in Australia-AFAP ▪ Have been successful in accessing funding for projects. ▪ Good network within the state government and with other NGOs ▪ Established office, infrastructure etc. ▪ Recognized by the Government of India. ▪ Open, transparent and democratic process in management.	▪ Lack of full time paid Executive Director ▪ Except for one clerical staff all activities done on voluntary basis by executive members. ▪ Because all executive members are engaged full time in their proffessional careers difficult for them to give time as and when required. ▪ Need for greater focus in scope of activities. ▪ Lack of a wider circle of members ▪ Not accessing effectively or adequately information on Central Government schemes seeking NGO involvement. ▪ Involvement of members in other organizations.

OPPORTUNITIES	THREATS
▪ Time ripe to forge partnerships with State and Central governments and national and international organizations ▪ Capitalize on existing relationships with KEEP & AFAP ▪ Establish good track record with current project funded by AFAP & AUSAid ▪ Work towards sustainability ▪ Build up in house capacity to undertake more development activities	▪ Lack of focus leading to dissipation of resources and energy ▪ Lack of infusion of new blood in membership ▪ State Govt. and Bureaucracy closing doors on NGOs due to perceived threats from them especially regarding issues of governance ▪ Absence of self monitoring of NGOs ▪ NGOs competing with each other for funds in an unhealthy manner ▪ Lack of capacity of many NGOs to undertake development oriented projects

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contactperson-Mr.Loday Chungyalpa.

Source: Annual Report of SDF.

Special Education and Rehabilitation Centre.

The Special Education and Rehabilitation Centre at Deorali neat SITCO, Gangtok is a second home for eighteen children who suffer from Cerebral Palsy Centre is run by the 'State Council for Child Welfare, Gangtok' and is affiliated to the 'Indian Institute of Cerebral Palsy, Calcutta'. It is funded a minimal amount in cash by the State Council for Child Welfare through Government grants. The health Department of Gangtok donated a bus to the Centre in 1996. This in turn helped to encourage students suffering from cerebral palsy to come from all over the town.

The Centre was started in 1993, by Dr. Bela Century, the then Director, department of Health, Govt. of Sikkim and the Centre was initially located in Development Area, Gangtok.

The Centre for Special Education is a day centre for the education and rehabilitation of children with CP and is open Mon-Fri from 10 a.m. – 2.30 p.m. It caters to children within the age group of 2 to 18 years.

Vision:

The Centre envisages at making these children as independent as possible so that they can intgrate with the society. The staff members strongly believe that a child with cerebral palsy is never too young to be helped, 'the younger the better'.

Activities:

The physiotherapist, along with the other members gives children regular individual therapy sessions to improve their physical and functional abilities. The programme provided by the Centre includes training in basic communication, elementary studies, self-care, colour identification and mobility skills.

Weakness:

The centre itself suffers from a number of handicaps. Mrs. Rai who has been with the centre since 1996 feels that the most important thing the centre requires is a permanent premises with an open space. In spite of regular pleas the government has been reluctant to grant any land or building for the same. The centre also lacks basic equipments like gaiters, wheelchairs, calipers and collars. Lack of volunteers is also another problem.

Strengths:

So one naturally questions how has the centre been functioning with such minimum funds and many handicaps. Anyone who has spent some time with the centre will know that it is the dedication and hard work of the staff members and their comparison and respect for these children which has kept the centre going.

They are no miracle workers but they have seen miracles happening in the case of Deepa, Joseph and Pritam who were previously the students of the centre and were admitted to normal schools recently. Abimal who was brought to the centre two months ago could not move his legs but now after regular therapy sessions, he staggers across the room.

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Weekend Review,20-26th April,2001.

Talking about monsoons, the initial activism for clean, clog free drains and jhoras seems to have died out. After each Norwester shower, the drains expulge whatever filth they had contained over the dry period. Everything frokm plastic, household waste and even rocks litter the streets. With the drain opposite the newly shifted District Administration Centre at Sichey still clogged, it will perhaps take another landslide before the brooms come out again.if the jhoras and drains were to just "drain" away water, there would be no problem. Water would find its own safe course, but because these amenities double also as garbage receptacles, they pose a danger. The capital might boast of a sewage treatment plant and a state-of-the-art garbage recycling plant, but the fact remains that the "rubbish truck" and UD&HD bins account for less than quarter of the garbage tonnage that Gangtokians generate. All this finds disposal at the jhoras at night and spills to the roads after a rain. These are affairs that need addressing immediately before the monsoon fury hits the hills in full force.

SEASON Weekend Review, 20-26th April,2001

The capital requires 6 million gallons of water per day, but the reservoir has capacity to treat only half the volume. The Power situation turned so bad that it triggered off a PIL. The bureaucracy got so spread out and directionless that amalgamations were deemed necessary. Roads had become so poor that new ventures were put on hold till the existing network was repaired. The employment roster is so flawed that a litigation follows each time appointments are made. The Finances so poor that the State is actually thinking of increasing its tax base. Employment strategies so haphazard that job avenues in "government service" have all but dried up. The education Infrastructure so inadequate, that only three have passed the Civil Services exams from the State to date. Health services so under utilised that almost every complication gets referred outside. Political maturity so nascent that elections are still fought on promises made twenty years back.

The surprises, or rather the rude awakenings, that the institutions spring everyday would have been foreseen if only we had concentrated on issues instead of kickbacks in the decades that followed the merger. Thanks to those lost years when corruption became synonymous with governance, Sikkim mutated from the priveleged/pampered State (the envy of its

neighbours) to one that now provides fodder for scams and jokes with mendacity it lived through the eighties. Sikkim evokes visions of vulgar excesses among its neighbours when it should have evolved as the prototype of development. It is the legacy pretence that Sikkim will have to write off it it aspires to enter the new millenium with hope and pride. An uphill task no doubt, only we are to blame for having dug the ditch so deep.

POLLUTION

GANGTOK: The area around any hospital is declared a silence zone, but Gangtok, the case is the exact opposite of what it should be. The hospital crossroads, popularly known as "Hospital Dara," is the busiest and noisiest area in the entire town which witnesses constant plying of vehicles from monitoring till evening. This has been contributing greatly towards the concentration of polluting oxides like Sulphur-di-oxide, Nitrogen-di-oxide and soot in the air. A report on Pollution & it's Effects, prepared by Environment & Pollution Control Division of the Forest Department reveals that the "silence zone" of Hospital Dara "was found to the most affected by noise pollution".

The culprit is obviously the ever-increasing vehicular population of the capital. In fact in the absence of any industries, most of the air pollution in the State comes from the exhaust pipes of the vehicles. Studies conducted by State Pollution Board shows that the pollution caused by vehicular traffic is by far the highest in Gangtok. The total number of vehicles registered in 1994 was 6945 whereas the number has more than doubled to 14,688 by 1999. While there were 1122 mainline and local taxis in the state in 1993, recent survey shows that there are around 3,800 taxis in Sikkim with 2,805 taxis in Gangtok alone.

The Joint Secretary, Motor Vehicles Division cum the Secretary of State Transport Authority (STA), Ujjwal Gurung, however, informs that STA will be holding a meeting next month where they hope to come up with solutions to stop vehicles coming to Gangtok. "As of now, the route permit is being given only to those educated unemployed who are Sikkim Subject of Domicile holders" he adds. Besides this the department has also stopped the transfers of registration number of vehicles.

Automobiles are the main contributors of air pollution. The emission from vehicles depends not only on the number of vehicles plying on the road but also on traffic congestion, driving habits, maintenance and age of vehicles. Experts maintain that the air pollution in Gangtok is so bad that its inhalation is equivalent to smoking three cigarettes per day.

Apart from the congestion of roads due to the fact that there is hardly any space left in town to accommodate all the vehicles and the creation of noise and air pollution, the increasing number of taxis do little to create avenues for self-employment. "The roads are already congested with vehicles and adding more to it doesn't make sense." Mr. Gurung adds while expressing his opinion that bringing in any more taxis doesn't make any sense as it no longer serves as a means of self-employment keeping in mind the large number of taxis that are already there.

The fact that the vehicular population is bursting is apparent in the fact that every empty space in the capital is getting earmarked for parking lots instead of getting beautified into parks that one would expect in tourist destination.