

ECONOMY OF THE DARJEELING STUDY REGION

3.1 Socioeconomic Factors & Regional Livelihoods

In any rural community, existing livelihood choices are partially defined by background characteristics such as demographic and asset-holding profiles and patterns of asset-utilisation. As these are influenced by local *environmental* conditions, they also reflect the sustainability of present livelihoods. The 'survival strategies' adopted by the poor in particular are primarily determined by their micro-social behaviour when coping with livelihood crises (Haan & Zoomers, 2005). Household demographic characteristics such as household-sizes, literacy and educational attainments and age-group composition can however vary over social castes, communities and rural-urban dimensions of the space. Among farm households, agricultural landholding-size is directly related to average family size, while literacy and the level of educational attainment relate directly to holding-size (Rao & Charyulu, 2007). Thus socioeconomic features also define the potential for success or failure in regional development strategy. Gender differences in livelihood profiles surface with widening gender disparities in sex ratios, literacy and educational attainment and gender work participation. Gender inequalities and overall environmental decline marginalise the means of livelihood that are available to the poor (Dasgupta, 1993; 1995; 1996; 1998), causing greater poverty to linger among women (Braidotti *et al.*, 1994). Although women's distinctive roles are being recognised in the mountain development process since the 1970s (Gurung, 1995), mainstream models still measure growth solely in terms of increased economic production. Thus with their non-market nature, the economic roles that women play continue to remain 'invisible' in rural subsistence societies (*ibid.*).

While regional demographic pressure is expressed by population density and its converse, *i.e.* land-man ratio, regional land-use especially in mountain regions is further constrained by topography and agroclimatic conditions, and by prevailing modes of land-use practice dictated by past land policies. Studies in the literature, which show that intersectoral allocations of labour change as economic development gets under way (Clark, 1940; Kuznets, 1965), attest to the intimate interrelation between occupational structure and growth of employment. However, because of overpopulation in India, the Clark-Kuznets relation has only been visible in relative sectoral production and not in the relative sectoral share in total employment. Instead, relative employment in the primary sector has remained stagnant over long periods. Rapid growth of population and labourforce in developing countries with limited non-farm employment opportunities makes their agricultural dependence more acute, so that expansion of rural employment opportunities depends on agricultural growth. The pace of growth of employment is also influenced by the extent of commercialisation, poverty incidence and degree of income and wealth inequalities, and social asset endowments. Thus the relationship between socioeconomic variables and the share of non-farm employment changes with the level of agricultural development (Unni, *op. cit.*).

The hill regions to the west of Tista, *i.e.*, present Darjeeling Subdivision and Kurseong Subdivision and the *terai* region, *i.e.*, the present plain subdivision Siliguri were brought under the district territory by the British from Sikim *Raja* in 1836 and 1850 respectively, while the hill region to the east of Tista, *i.e.*, present Kalimpong Subdivision was added to the district from Bhutan in 1966 (Dash, *op. cit.*). The British Administration had developed Kurseong Subdivision separating it from Darjeeling Subdivision in 1891, Siliguri Subdivision by separating it from Kurseong Subdivision in 1891, and Kalimpong Subdivision in 1916 (*ibid.*).

Darjeeling is the northernmost among the districts in West Bengal, and is also among its smallest districts, with a mountainous area of 2157 sq.km spread over Darjeeling Sadar, Kalimpong and Kurseong subdivisions, and a plains area of 949 sq.km covering Siliguri subdivision (Chakraborty, 1986). The district is situated between 26°31'N & 27°13'N latitude and 87°59'E & 88°53'E longitude (*ibid.*). The northern boundary of the district commences from Phalut peak (3600m) on the tri-junction of the boundaries of Nepal, Sikkim with Darjeeling and then runs eastwards along the ridge descending to the river Rammam, across which lies the state of Sikkim (*ibid.*). It follows the course of this river till it joins the Rangit, the Great Rangit and eventually the Tista. From this point of confluence, it follows the Tista upstream till its junction with the Rangpo Chu and Rishi Chu, and then ascends the ridge to the Rechila peak which is the highest point in the eastern part of the district (*ibid.*). The river Jaldhaka which descends from Bhutan forms the northeastern boundary of the district, while the western boundary follows the Singalila ridge southwards from Phalut till the Mechi river, which demarcates the boundary of the district thereafter into the plains. Bordering the extreme southwest of the district lie Araria district in Bihar and Uttar Dinajpur in West Bengal. Beyond this point, the district is separated from Bangladesh by the southward course of the Mahananda river and adjoins Jalpaiguri district to the southeast (*ibid.*).

Within its compass, the district includes three widely differing physiographic tracts comprising

- (a) the mountain region to the west of the Tista which includes the Darjeeling Sadar and Kurseong subdivisions,
- (b) the mountain region to the east of Tista which is spanned by Kalimpong subdivision, and
- (c) the *terai* which is spanned by Siliguri subdivision (O'Malley, 1907).

The British decision to acquire Darjeeling from Sikkim in 1835 for setting up a health resort, and their subsequent decision to commence the plantation of tea in the region west of the Tista since 1856 played a crucial role in the development of Darjeeling district (*ibid.*). Large areas of forest land were brought under cultivation. The new plantations encouraged a wave of Nepali migration to the west to labour in the new tea plantations, swelling the population of Darjeeling from insignificant to sizeable levels, while also laying the foundations for a more advanced hill economy to which the opening of communications via the Hill Cart Road in 1861 and the Darjeeling Himalayan Railway in 1881 contributed notably (*ibid.*). Forestry development through an organised Forest Department also contributed to economic development (*ibid.*). In face of rapid extension of agriculture in the initial phase, the preservation of remaining forests was necessary for the conservation of timber and water-supply and for protection against erosion (Dash, *op. cit.*). Other plantation experiments with cinchona, coffee and tobacco were also tried at different times in the mountains with varying degrees of success. Nevertheless, except for the practice of shifting cultivation being given up, agriculture through most of the mountain region has remained relatively at the same stage of development, as during the British period. Although British administrators made several attempts to introduce orchardry, improved seeds and better agricultural implements, the mountain agriculturists have remained inherently conservative (O'Malley, *op. cit.*).

While typical of the Eastern Himalaya, with high rainfall, less arable land and less-developed agriculture, the Darjeeling region was a late-colonial acquisition of the British from Sikkim and Bhutan, during the era of spread of commercial tea plantations and labour migration. Because of this combination of economic and historical factors, land use in the Darjeeling Himalaya is a geographical oddity, neither sharing similarity to contiguous regions like Sikkim, or to the Himalaya further to the west or east (Sankrityayana, 1997). Although topographical difficulties, agroclimatic adversities and preexisting land-use restraints combine to place agriculture in a critical position in mountain areas, Kalimpong-1 and Kalimpong-2 blocks to the east of Darjeeling district are better predisposed towards rice and maize & millet-based cropping because of their warmer climate, gentler elevation and virtual

lack of tea plantations. In relation to such physical characteristics, the socioeconomic attributes of rural households in different parts of the mountain region are analysed to sketch out the general comparative profile of the district. Thereafter, the socioeconomic characteristics of sample households drawn from the selected village hamlets are compared with each other and with the rest of Darjeeling district in order to develop a precise understanding of their placement within the rural development context.

3.2 The Block-level Analysis

For magnificent flavor Darjeeling tea is famous to all and thereby Darjeeling is well known in the world. But Kalimpong is comparatively unknown, although for sustaining the tea plantation in Darjeeling District, the agricultural settlement of Kalimong Subdivision plays immense role. The phenomenon growth of the district population since 1872 was because of the development of tea industry to the west of Tista and the *tarai*, and the influx of agricultural settlers to exploit the waste land of the district, especially to the east of the Tista (O' Malley, *op. cit.*). For the rapid development of tea industry local labour supply was quite inadequate, and thereby huge tea labourers were employed on the tea estates in the hills from Nepali immigrants and in the *tarai* from Nepal and *Chota Nagpur* (O' Malley, *op. cit.*). However after 1891, especially during the period ending in 1901, the industry entered a period of depression (Dash, *op. cit.*). When Kalimpong Subdivision was annexed from Bhutan, its entire population was few, and of Bhutias and aboriginal Lepchas (O' Malley, *op. cit.*). A part of the Kalimpong tract was under Government Reserve Forest and the rest land was reserved for native cultivation. Along with the influx of Nepalese tea labourers, immigration of Nepalese agriculturist was also taken place in Kalimpong as the land was suitable for cultivation. Moreover, Nepalese tea labourers also shifted in Kalimpong, especially during the period of depression of tea industry, for agricultural settlement through buying up good quality lands from the Lepchas or clearing holdings from jungle (O' Malley, *op. cit.*).

During the development of subdivisions of the district by the British administration the police stations under the respective subdivisions were Darjeeling, Pulbazar, Rangli-Rangliot, Jorebunglow and Sukhiapokhri under Darjeeling Subdivision; Kurseong and Mirik under Kurseong Subdivision; Kalimpong and Gorubathan under Kalimpong Subdivision; and Siliguri, Kharibari and Phansidewa under Siliguri Subdivision. Later on, for initiating development community development blocks were constructed. Since 1991 Census, Kalimpong Block was bifurcated into Kalimpong-1 and Kalimpong-2 Block. Moreover, since 2001 Census Matigra-Naxalbari Block was separated into Matigra and Naxalbari blocks, and Kharibari-Naxalbari Block was also separated into Kharibari and Phansidewa blocks under Siliguri Subdivision.

3.2.1 Demographic Profile

Table 3.1 compares demographic characteristics between the 12 community development [CD] blocks that make up Darjeeling district. While for the state of West Bengal as a whole, average family sizes in 2001 were lower than the national average of 5.35 for India as a whole, average family sizes in Darjeeling district were slightly smaller. However, as opposed to the trends in national and state averages, rural families in Darjeeling were smaller (4.96) than urban families (5.24). Annual population growth rates in Darjeeling district between 1991-2001 (2.4%) were well above the state average (1.8%) because of high in-migration as well as natural population growth. For the individual blocks, annual growth was sharpest in the plains blocks (>3.4%), lower in the principal agricultural hill blocks (between 1.7-2.6%) and lowest in the hill tea-growing blocks because of local outmigration. With lower population growth in the tea region, families were generally smaller (<4.92) in the principal tea-growing blocks, including relatively more urbanised Matigra and Naxalbari blocks, than in the agricultural blocks of the hills and plains (>5.00), and were largest at 5.24 in Kalimpong-1 and Kalimpong-2 block. Such variations in family size between different CD blocks directly affect labour force distribution and consumption levels in the district. The larger average family sizes in the agricultural blocks would be

Table 3.1: Comparative Block Demography of Darjeeling District (1991-2001)

CD Block/ District	House- holds (2001)	Population (2001)			2001		Females per 1000 Males 2001		Females per 1000 Males Decadal Change (1991-2001)		Decadal Growth in House- holds (%) (1991- 2001)	Annual Population Growth (% p.a.) (1991- 2001)
		Total	Males	Females	Family Size	Decadal Avg Change (1991- 2001)	Decadal		Overall			
							Overall	(0-6) years	Overall	(0-6) Years		
<i>Principal Agricultural Hill Blocks</i>												
Kalimpong-1	12920	67680	34382	33298	5.24	-0.40	968	955	14	-68	35.8	2.6
Kalimpong-2	11501	60263	31309	28954	5.24	-0.53	925	968	14	-13	29.0	1.7
Gorubathan	10863	54279	27572	26707	5.00	-0.18	969	1045	53	80	21.3	1.7
<i>Principal Tea-Growing Hill Blocks</i>												
Darjeeling- Pulbazar	23633	115837	58407	57430	4.90	-0.27	983	985	32	15	4.4	-0.1
Rangli-Rangliot	13092	64349	32304	32045	4.92	-0.47	992	919	34	-32	8.0	-0.2
Jorebunglow- Sukhiapokhri	22048	100724	49816	50908	4.57	-0.48	1022	992	33	-18	20.6	0.9
Mirik	8804	42237	21112	21125	4.80	-0.30	1001	954	77	-46	32.0	2.4
Kurseong	17970	85867	43330	42537	4.78	-0.35	982	969	35	1	16.8	0.9
<i>Plains Blocks</i>												
Matigara-	26346	129326	68004	61322	4.91	-	902	972	-	-	-	-
Naxalbari	30305	144915	75831	69084	4.78	-	911	939	-	-	-	-
Kharibari	17352	88230	45449	42781	5.08	-	941	950	-	-	-	-
Phansidewa	32443	171508	87945	83563	5.29	-	950	979	-	-	-	-
Darjeeling DT	318737	1609172	830644	778528	5.05	-0.14	937	962	23	-14	27.2	2.4

Source: Darjeeling District Primary Census Abstract, 1991 & 2001

directly influenced by higher per capita relative availability of land for cultivation, although between 1991 and 2001 family sizes declined in all blocks.

Historically, because of higher urbanisation levels, the *inverse sex-ratio* or number of females per 1000 males (i.e. *FMR*) has been lower in Darjeeling district than in West Bengal or India. While in conformity with the state and the nation, average FMRs in the Darjeeling rural blocks were better than in the urbanised blocks, FMRs in the hill tea blocks were higher than in the agricultural blocks, and were lowest on the whole in the plains blocks. Between 1991-2001, child FMRs had shown sharp decline in the district. Outmigration of males in the workforce was an important factor influencing low FMRs in the hill region, where there were less work opportunities for males entrants in the workforce. This was true particularly in the tea region, where work opportunities in the tea estates were limited and were hardly available outside the tea sector.

The proportion of child dependents in the age-group 0-6 years in ratio to the block populations would indicate the future need for supportive social institutions providing educational services and healthcare. The proportion of dependent children in this age-group was lower in Darjeeling district (12.7%) than in West Bengal (14.2%) and India (16.0%). Darjeeling district ranked sixth in literacy among the districts of West Bengal. Average literacy levels in the district have traditionally been high compared to the West Bengal and India averages. Table 3.2 below relates block literacy trends in the district to the trends in child-dependency. Compared to the plains blocks, literacy has traditionally been much higher in the hills. Although male literacy too was invariably high in the tea blocks, it was lower in the hill agricultural blocks in relative terms. With population growth and more pressure on land, in search of tertiary jobs literacy gain occurred in all the blocks. Because of relatively more population growth and consequently pressure on cultivated land, the hill agricultural blocks had attempted to catch up the literacy of the hill tea blocks. Nevertheless the gains in gender literacy and the lowered gender literacy disparity levels between 1991-2001 indicated that this gap was closing. However a moderate level of gender disparity in literacy persisted in the blocks with higher disparities in the rural blocks than in

Table 3.2: Block Literacy in Darjeeling District (1991- 2001)

CD Block/ District	% Children (0-6) years in Total Population	% Literacy		% Literacy Gain (1991- 2001)		% Male Literacy Gain (1991- 2001)		% Female Literacy Gain (1991- 2001)		% Gender Disparity in Literacy		
		1991	2001	1991	2001	1991	2001	1991	2001	1991	2001	
<i>Principal Agricultural Hill Blocks</i>												
Kalimpong-1	12.84	60.79	74.15	13.36	69.36	81.50	12.14	51.70	66.57	14.87	17.65	14.94
Kalimpong-2	11.73	54.08	69.58	15.50	62.65	77.32	14.67	44.54	61.15	16.61	18.1	16.17
Gorubathan	13.31	44.71	66.93	22.22	55.08	76.22	21.14	33.27	57.23	23.96	21.81	18.99
<i>Principal Tea-Growing Hill Blocks</i>												
Darjeeling-Pulbazar	11.24	53.28	72.86	19.58	64.31	82.36	18.05	41.64	63.18	21.54	22.67	19.18
Rangli-Rangliot	10.38	54.26	72.76	18.50	64.35	82.08	17.73	43.75	63.44	19.69	20.6	18.64
Jorebunglow- Sukhiapokhri	9.89	57.12	76.68	19.56	68.78	86.86	18.08	45.28	66.75	21.47	23.5	20.11
Mirik	11.78	62.30	72.04	9.74	73.00	82.43	9.43	50.57	61.71	11.14	22.42	20.72
Kurseong	11.57	59.94	74.44	14.50	71.62	84.09	12.47	47.55	64.62	17.07	24.08	19.48
<i>Plains Blocks</i>												
Matigara	15.30	-	64.82	-	-	75.04	-	-	53.33	-	-	21.71
Naxalbari	15.09	-	66.85	-	-	77.26	-	-	55.36	-	-	21.90
Kharibari	17.38	-	54.86	-	-	67.03	-	-	41.90	-	-	25.13
Phansidewa	18.89	-	50.32	-	-	62.23	-	-	37.71	-	-	24.52
Darjeeling DT	12.72	57.95	71.79	13.84	67.07	80.05	12.98	47.84	62.94	15.10	19.23	17.11

Source: Darjeeling District Primary Census Abstract, 2001

more urbanised blocks, in the plain blocks than in the hill blocks, and in the hill tea blocks than in most hill agricultural blocks in relative terms. Nevertheless, in most district blocks where the literacy was relatively higher, the family size was relatively smaller. Hence, in such blocks literacy may help to reduce family size. The proportion of child dependents in the age-group 0-6 years was higher in the plain blocks than in the hill blocks as well as in the hill agricultural blocks than in the hill tea-blocks. The blocks where literacy was higher, the proportion of child dependents in such age-group was lower in relative terms.

Caste demography also influences socioeconomic behaviour. Below Table 3.3 shows comparative caste demography in Darjeeling blocks. The proportions Scheduled Tribes (ST) and Scheduled Caste [SC] population in West Bengal population were 5.5 and 23.0 compared to 8.2 and 16.2 for all-India respectively in 2001. The percentage of ST population was relatively higher while that of SC population was relatively lower in the district than in the state and nation. However, the combined percentage of ST and SC population to total population was relatively lower in the district than in India, but it was almost same in the district and the state. The percentages of ST and SC population would reside in rural tract were 87.6 and 80.1 in the district compared to 91.7 and 79.8 in the nation and 93.9 and 84.1 in the state. Hence, the improvement of living standard of ST and SC population primarily depends on pace and progress of rural development.

The percentages of SC and combined SC and ST population to total population were comparatively higher in the plain blocks than the hill blocks. The percentages of of ST or combined SC and ST population to total population were relatively higher in most hill agricultural blocks than in most hill tea blocks, since in the hill blocks the ethnic ST population primarily depended on agriculture for their livelihood as in case of ethnic SC in the plain bocks where the ST were mainly tea labourers. In the district and in its most blocks, the average family size was relatively smaller for ST and SC households than for non-SC and non-ST households in conformity to the study (Gang *et al*, 2003). With relatively higher population growth, families were relatively higher for the ST compared to the SC households in the hill agricultural blocks, and the ST had attempted to come out from agriculture through attaining relatively higher literacy compared to the SC. In the plain blocks where annual growth of SC population

Table 3.3: Caste Demography of Darjeeling Blocks

CD Block/ District	% Proportion to Total Population in 2001			Avg. Family-size	Annual Population Growth (1991-2001) (% p.a)				2001 SC Literacy (%)			2001 ST Literacy (%)		
	SC	ST	Non- SC/ST		SC	ST	SC	ST	Total	Male	Female	Total	Male	Female
<i>Principal Agricultural Hill Blocks</i>														
Kalimpong-1	7.10	17.55	75.35	4.51	5.06	1.81	2.54	70.72	79.23	62.43	76.22	83.34	69.24	
Kalimpong-2	3.00	24.62	72.39	4.92	5.22	-1.16	2.10	66.20	74.72	57.29	68.16	75.19	60.76	
Gorubathan	5.68	10.83	83.49	4.56	4.56	0.50	0.38	60.57	71.50	49.59	56.24	65.45	46.65	
<i>Principal Tea-Growing Hill Blocks</i>														
Darjeeling-														
Pulbazar	4.17	7.75	88.08	4.61	4.72	-1.49	-0.17	65.73	75.79	56.07	67.12	76.72	57.24	
Rangli-Rangliot	3.90	7.81	88.29	4.50	4.50	-3.40	-1.57	61.97	72.69	51.21	74.03	82.06	65.84	
Jorebunglow- Sukhiapokhri	5.95	6.9	87.16	4.37	4.12	0.04	1.49	70.59	82.90	59.32	77.79	85.72	70.53	
Mirik	7.28	7.42	85.30	4.71	5.06	5.93	20.18	66.22	79.19	54.07	62.07	73.67	51.00	
Kurseong	7.90	8.85	83.25	4.52	4.57	-0.23	1.38	71.92	82.55	61.54	59.01	68.00	49.94	
<i>Plains Blocks</i>														
Matigara	34.80	14.24	50.97	4.86	4.96	-	-	55.96	68.38	42.74	43.51	55.54	31.28	
Naxalbari	25.43	18.68	55.89	4.81	4.94	-	-	62.80	75.73	48.97	41.77	54.49	28.99	
Kharibari	50.85	19.38	29.77	5.00	4.86	-	-	59.59	72.24	46.15	33.09	45.66	20.37	
Phansidewa	31.12	31.28	37.60	5.04	5.26	-	-	58.41	71.24	44.48	42.08	53.01	31.09	
Darjeeling DT	16.09	2.69	71.22	4.83	4.97	2.33	1.40	62.43	73.91	50.31	55.48	65.07	45.85	

Source: Darjeeling District Primary Census Abstract, 1991 & 2001

was relatively high at 3.25% compared to the ST (1.17%), the same attempt had made by the SC households. In the district and its most blocks, the literacy of non-SC and non-ST population was relatively higher than the literacy of SC or ST population in conformity to the study (Singh and Rajyalakshmi, 1993).

In India, the proportion of STs in total population had risen slightly between 1991-2001, accompanying with a decline in the proportional presence of SC population. However, the relative presence of both the SC and ST population had declined in the district and the state, despite positive growth of both SC and ST population. In conformity to the state and the nation, in the district and its most blocks, non-SC and non-ST population had increased at a greater pace than the combination of SC and ST population. But the annual growth of ST population was relatively lower, while the annual growth of either SC or combination of SC and ST population was higher in the district than in the state. In most district blocks, both SC and ST population has increased with relatively less annual growth of SC population in most hill blocks compared to the plain blocks as a whole (3.25%). Despite negative annual growth of both SC and ST population, positive annual growth of non-SC/ST population had occurred in Darjeeling-Pulbazar and Rangli-Rangliot Blocks.

3.2.2 Land Pressure and Land-use

The 12 CD blocks of Darjeeling district have distinct spatial and land-use characteristics that categorise them into three subgroups, namely

- (i) the tea-yielding hill blocks of Darjeeling-Pulbazar, Rangli-Rangliot, Jorebunglow-Sukhiapokhri, Mirik and Kurseong located to the west of the river Tista;
- (ii) the non tea-yielding hill blocks of Kalimpong-1 and Kalimpong-2 and Gorubathan located to the Tista's east; and
- (iii) the plain blocks of Matigara, Naxalbari, Kharibari and Phansidewa located in the Terai

This demarcation of tea and non-tea hill tracts along the watershed of the Tista is completely historical, dating back to the Forest Acts and Waste Land Acts passed during British colonial days (Sankrityayana, 1997). The present land-use practice of the Darjeeling Himalaya have evolved as an extension of British policy intents, with large tracts being sealed off from public use by their designation as reserve forests or as private lease lands e.g. the tea areas (*ibid.*). The settlement density & land and road availability of Darjeeling blocks is presented in Table 3.4.

Table 3.4: Block-wise Settlement Density & Land and Road Availability in Darjeeling District 2001

CD Block/ District	Non- Municipal Towns	Populated Villages	% Rural Population	Areas (sq.km.)	2001 Density (Persons per sq.km.)	Land-man Ratio (Ha per person)	Density [Road Length (km.) per sq.km.]	% Villages having Approaching to Metal Road
<i>Principal Agricultural Hill Blocks</i>								
Kalimpong-1	-	44	100	360.46	188	0.53	0.197	63.6
Kalimpong-2	-	33	100	241.26	250	0.40	0.232	69.7
Gorubathan	-	27	100	442.72	123	0.82	0.122	37.0
<i>Principal Tea-Growing Hill Blocks</i>								
Darjeeling-Pulbazar	1	45	98.6	416.00	278	0.36	0.901	71.1
Rangli-Rangliot	-	29	100	272.99	236	0.42	0.278	100.0
Jorebunglow-Sukhiapokhri	-	47	100	222.12	453	0.22	0.351	95.7
Mirik	-	21	100	119.18	354	0.28	0.403	95.2
Kurseong	1	65	84.1	372.30	231	0.43	0.336	81.5
<i>Plains Blocks</i>								
Matigara	1	69	95.8	143.00	904	0.11	0.462	98.6
Naxalbari	1	82	89.1	181.88	797	0.13	0.379	85.4
Kharibari	-	75	100	144.88	609	0.16	0.345	100.0
Phansidewa	-	103	100	312.15	549	0.18	0.122	96.1
Darjeeling DT	4*	640	67.7	3149.00	511	0.20	0.387	86.3

Sources: 1. Darjeeling District Census Report- 2001, 2. District Hand Book-2003-2004, and 3. Kalimpong PWD Office

*excl. Towns, Municipalities, Municipality Corporatio, and Notified Areas;

Kalimpong-1, Darjeeling Pulbazar and Kurseong blocks are each served by a municipal town; Mirik Block by a notified area, and Matigara and Naxalbari blocks by Siliguri Municipal Corporation

Urbanisation in the district was higher than in the state, and urban population density on the average was also higher. Along with the greater number of populated villages, settlement and population density were much higher and land-man ratios much lower in the plains blocks compared to the hill blocks. In the fast urbanising plainsblocks of Matigara and Naxalbari inward migration was relatively higher. In hill tea blocks, population density was higher than in the hill agricultural blocks because of their earlier settlement, greater number of populated villages and greater job opportunities at the large number tea gardens in these blocks. Population density was highest at 904 per sq.km in the urbanised tea block of Matigara in the plains, and lowest at 123 per sq.km in the non-tea hill block of Gorubathan. Because of the transportation needs of tea, oad density and access to metalled roads was higher in the hill tea-blocks. Nevertheless, the apparently favourable land-man ratios in the hill blocks was not reflected fruitfully in efficient land-use in the hills. A large portion of the hill area was not available for settlement and cultivation because of prior commitment to reserved forests, or because of unsuitable gradients, rocky soil-profiles, etc.. Thus land-use in the hills became a critical factor. The criticality of land-man relationships is a major constraint to agricultural development in the Darjeeling Himalaya (*ibid.*).

The information on land-use pattern of Darjeeling blocks is shown below in Table 3.5. While the relative proportion of forest land in the district was higher than in the state, more cropland was available in the plains blocks. A substantial portion of the hill forest lands comprised government reserve and protected forests, where adjacent settlements had little access to timber and usufructs. In most hill tea blocks, the proportion of cultivated land was higher than in agricultural blocks. The opposite generally held true for the relative proportion of forest land. As the extent of culturable wastelands in the hill

Table 3.5: Rural Land-use in Darjeeling Blocks 2001

CD Block/ District	Repor- ing Area (ha)	Forest Land Area under Forest (ha)	Net Cultivated Area [NCA] (ha)			Cultura- able Waste- land (ha)	Area Unavail- able for Cultiv- ation (ha)	% Area under Forest	% Cultiv- ated Land	% Irri- gated NCA	% Unirri- gated NCA	% Cultur- able Waste- land	% Area Unavail- able for Cultiv- ation
			Total NCA	Irri- gated NCA	Unirri- gated NCA								
<u>Principal Agricultural Hill Blocks</u>													
Kalimpong-1	36046	20443	13612	3713	9898	176	1815	56.7	37.8	27.3	72.7	0.5	5.0
Kalimpong-2	24126	9457	7182	1766	5416	1561	5925	39.2	29.8	24.6	75.4	6.5	24.6
Gorubathan	44272	18212	15314	1795	13519	5673	5072	41.1	34.6	11.7	88.3	12.8	11.5
<u>Principal Tea-Growing Hill Blocks</u>													
Darjeeling- Pulbazar	41380	19502	19444	7172	12272	103	2332	47.1	47.0	36.9	63.1	0.2	5.6
Rangli-Rangliot	27299	10455	6322	1588	4733	7686	2836	38.3	23.2	25.1	74.9	28.2	10.4
Jorebunglow- Sukhiapokhri	22212	5552	11076	1922	9154	3182	2402	25.0	49.9	17.4	82.6	14.3	10.8
Mirik	11918	2902	6172	993	5180	1532	1311	24.3	51.8	16.1	83.9	12.9	11.0
Kurseong	35431	11767	15897	3492	12405	3528	4239	33.2	44.9	22.0	78.0	10.0	12.0
<u>Plains Blocks</u>													
Matigara	14049	1750	8310	1521	6789	1546	2444	12.5	59.2	18.3	81.7	11.0	17.4
Naxalbari	18025	3061	10671	5278	5394	810	3483	17.0	59.2	49.5	50.5	4.5	19.3
Kharibari	14488	328	9656	303	9353	837	3667	2.3	66.6	3.1	96.9	5.8	25.3
Phansidewa	31215	0	21806	1060	20746	3529	5879	0.0	69.9	4.9	95.1	11.3	18.8
Darjeeling Rural	20461	103429	145461	30602	114859	30164	41406	32.3	45.4	21.0	79.0	9.4	12.9

Source: Darjeeling District Census Handbook, 2001

agricultural blocks was lower than in the hill tea blocks, the scope for expansion of agriculture along the extensive margin was limited. With very little of the western areas of the district being settled for agriculture, settlement density was higher there. No restriction to regional population settlement was imposed by the requirement of keeping agricultural holdings at a viable working size. Growth of population has thus had highly differentiated impacts through the hill blocks. Agricultural development in the western region has been constrained by the extremely limited availability of private lands, with the major part of the region being under tea and forests. Expansion on the intensive margin is constrained by topographic difficulties and adverse climatic situations (*ibid.*).

The ratio of irrigated land to total cropland and the average duration of irrigation have substantial impact on cropping patterns and cropping intensity, as well as the potential for diversified agriculture in any region. Irrigation ratios in the district blocks were substantially below the state and national average. In the hill tea blocks, plantation areas were included within irrigated cropland. Thus the quality of cropland *per se* was expectedly better in the agricultural blocks compared to the hill tea blocks.

Irrigation in the hills is mainly practised by diverting water from *jhoras* or small streams, and by lifting river water in the foothills. While most *jhoras* are seasonal in nature, flowing during the rainy season, irrigation through river-lifts, shallow & deep tubewells, and storage ponds in the plain blocks is generally perennial. Thus the extent and duration of irrigation is lower in the hills and varies widely between blocks. The inadequacy of irrigated cropland and the seasonality of irrigation are critical constraints in agricultural diversification in the hills, also tending to lower cropping intensity. It may hence be hypothesised that crop diversification in mountain areas depends on proximity to surface water sources.

Land-use patterns have been changing through the efflux of time in the Darjeeling hills, with growing population pressure on land. Changes in land-use between 1991-2001 in the Darjeeling blocks are analysed in the table 3.6. Increase in cultivated land in absolute terms has been achieved at the cost of declines in forests and culturable wastelands, through clearing more forest and bringing more marginal sloping land under cultivation. Ultimately this leads to unsustainability in land-use. Through the

Table 3.6: Changes in Rural Land-use in Darjeeling Blocks 1991-2001

District	% Forest Land		% Net Cultivated Area			% Irrigated NCA		% Culturable Wasteland			% Land Unavailable for Cultivation				
	Change		Change			Change		Change			Change				
	1991	2001	(1991-2001)	1991	2001	(1991-2001)	1991	2001	(1991-2001)	1991	2001	(1991-2001)	1991	2001	(1991-2001)
<i>Principal Agricultural Hill Blocks</i>															
Kalimpong-1	57.2	56.7	-0.5	37.4	37.8	0.4	27.1	27.3	0.2	0.5	0.5	0.0	5.0	5.0	0.0
Kalimpong-2	41.9	39.2	-2.7	15.4	29.8	14.4	78.2	24.6	-53.6	9.4	6.5	-2.9	33.3	24.6	-8.7
Gorubathan	40.4	41.1	0.7	35.5	34.6	-0.9	13.9	11.7	-2.2	12.9	12.8	-0.1	11.3	11.5	0.2
<i>Principal Tea-Growing Hill Blocks</i>															
Darjeeling-Pulbazar	40.1	47.1	7.0	55.0	47.0	-8.0	49.5	36.9	-12.6	0.2	0.2	0.0	4.8	5.6	0.8
Rangli-Rangliot	26.9	38.3	11.4	53.2	23.2	-30.0	13.2	25.1	11.9	6.7	28.2	21.5	13.1	10.4	-2.7
Jorebunglow-Sukhiapokhri	25.2	25.0	-0.2	49.6	49.9	0.3	17.2	17.4	0.2	14.4	14.3	-0.1	10.8	10.8	0.0
Mirik	19.8	24.3	4.5	68.9	51.8	-17.1	3.6	16.1	12.5	4.2	12.9	8.7	7.1	11.0	3.9
Kurseong	34.1	33.2	-0.9	46.6	44.9	-1.7	23.1	22.0	-1.1	8.8	10.0	1.2	10.5	12.0	1.5
<i>Plains Blocks</i>															
Matigara	-	12.5	-	-	59.2	-	-	18.3	-	-	11.0	-	-	17.4	-
Naxalbari	-	17.0	-	-	59.2	-	-	49.5	-	-	4.5	-	-	19.3	-
Kharibari	-	2.3	-	-	66.6	-	-	3.1	-	-	5.8	-	-	25.3	-
Phansidewa	-	0.0	-	-	69.9	-	-	4.9	-	-	11.3	-	-	18.8	-
Darjeeling Rural	29.9	32.3	2.4	49.1	45.4	-3.7	22.9	21.0	-1.9	7.4	9.4	2.0	13.6	12.9	-0.7

Source: Darjeeling District Census Report- 2001

agricultural blocks in the hills where population growth has been relatively high, the proportion of cropland has increased through proportionate decline in other land-use components. The ratio of irrigated to total cropland has declined through the hill blocks, but has risen in the plain blocks. The sharpest decline has occurred in Kalimpong-2 block. In urbanised blocks, declines in cropland area have partly been a consequence of urbanisation.

The pressure of growing populations on limited land and the relative viability of agriculture can be assessed by examining the size-distribution of agricultural holdings in the Darjeeling blocks as shown in Table 3.7.

Table 3.7: Size-Distribution of Agricultural Holdings in Rural Darjeeling in 2001

(percentages)

CD Block/ District	Landholding-sizes				
	< 1 ha	1-2 ha	2-4 ha	4-10 ha	> 10 ha
<i>Principal Agricultural Hill Blocks</i>					
Kalimpong-1	26.67	26.96	22.79	3.57	20.01
Kalimpong-2	48.44	32.86	9.59	4.65	4.46
Gorubathan	32.46	34.19	28.32	0.00	5.03
<i>Principal Tea-Growing Hill Blocks</i>					
Darjeeling-Pulbazar	65.17	18.29	9.28	2.58	4.68
Rangli-Rangliot	38.77	29.33	26.06	4.53	1.31
Jorebunglow-Sukhiapokhri	67.59	22.06	6.86	0.00	3.49
Mirik	69.92	30.08	0.00	0.00	0.00
Kurseong	51.20	34.93	11.75	0.00	2.12
<i>Plain Blocks</i>					
Matigara	92.17	6.11	1.41	0.13	0.17
Naxalbari	88.35	9.27	2.05	0.18	0.16
Kharibari	87.82	10.09	1.86	0.18	0.06
Phansidewa	82.57	15.31	1.80	0.24	0.08
Darjeeling Rural	50.41	24.72	13.77	4.73	6.37

Source: Agricultural Census of India 2001

Most significant was the clustering of agricultural holdings below 2 ha. size, and the high preponderance of extremely small holdings below 1 ha. in the tea blocks. Obviously, the pressure on cultivated land was higher in the district than in the state and nation. Land scarcity was relatively higher in the hill tea blocks and plains blocks than in the hill agricultural blocks. After accounting for forests, tea estates and unculturable wastelands, the land remaining for subsistence farming through the district was marginal.

3.2.3 Occupational Structure and Employment Growth

The extent of the population with access to gainful employment can be analysed through work participation rate [WPRs], where higher WPRs imply greater work opportunities and lowered economic dependency. Increased WPR in a phase of growing population is indicative of absolute growth of workers. The trends in work participation in Darjeeling between 1991 and 2001 are now analysed in Table 3.8.

Table 3.8: Population, Workforce & Work Participation Patterns in Darjeeling District 1991 & 2001

CD Block/ District	Workers				Work Participation Rates [WPRs] (%)				Workers				Work Participation Rate [WPRs] (%)		
	2001 Popula- tion	All Work- ers	Main Work- ers	Marginal Work- ers	All Work- ers	Main Work- ers	Marginal Work- ers	1991 Popula- tion	All Work- ers	Main Work- ers	Marginal Work- ers	All Work- ers	Main Work- ers	Marginal Work- ers	
<i>Principal Agricultural Hill Blocks</i>															
Kalimpong-1	67680	27112	19485	7627	40.1	28.8	11.3	53641	20322	19877	445	37.9	37.1	0.8	
Kalimpong-2	60263	24089	16829	7260	40.0	27.9	12.1	51411	22069	20863	1206	42.9	40.6	2.4	
Gorubathan	54279	22848	15971	6877	42.1	29.4	12.7	46382	17806	17653	153	38.4	38.1	0.3	
<i>Principal Tea-Growing Hill Blocks</i>															
Darjeeling- Pulbazar	115837	45676	36120	9556	39.4	31.2	8.3	117196	44266	43763	503	37.8	37.3	0.4	
Rangli-Rangliot	64349	20731	16464	4267	32.2	25.6	6.6	65342	19267	18652	615	29.5	28.6	0.9	
Jorebunglow- Sukhiapokhri	100724	33930	28032	5898	33.7	27.8	5.9	92312	31528	30868	660	34.2	33.4	0.7	
Mirik	42237	16093	12074	4019	38.1	28.6	9.5	34001	11583	11267	316	34.1	33.1	0.9	
Kurseong	85867	30653	24868	5785	35.7	29.0	6.7	78859	27572	27168	404	35.0	34.5	0.5	
<i>Plains Blocks</i>															
Matigara	129326	47063	41625	5438	36.4	32.2	4.2	-	-	-	-	-	-	-	
Naxalbari	144915	48805	43418	5387	33.7	30.0	3.7	-	-	-	-	-	-	-	
Kharibari	88230	34126	25600	8526	38.7	29.0	9.7	-	-	-	-	-	-	-	
Phansidewa	171508	62208	51690	10518	36.3	30.1	6.1	-	-	-	-	-	-	-	
Darjeeling Rural	1088740	403239	323423	79816	37.0	29.7	7.3	903859	326882	321260	5622	36.1	35.5	0.6	
Darjeeling DT	1609172	569442	478851	90591	35.4	29.8	5.61299919	444847	438248	6599	34.2	33.7	0.5		

Source: Darjeeling District Census Report- 2001

In 2001, the proportion of non-workers in the population was higher in the district than at state and national levels, even though the large number of tea workers of both genders improved the WPRs for main work. With many family members engaged in marginal work in cultivation, WPRs for total workers were higher for the hill agricultural blocks than for the hill tea blocks and plains blocks. Similarly, the WPRs for marginal workers were higher in the hill blocks than in most plain blocks, as also for the hill agricultural blocks. With more white-collar employment available in the Siliguri Municipal Corporation region in the plains, WPRs in main work was higher in most plains blocks than in the hills. Higher WPRs for main work in the two urbanised blocks of Darjeeling-Pulbazar and Matigara provide indication of more available work opportunities and lower economic dependency for their population, compared to blocks where main WPR blocks were lower.

Despite declines in the proportion of main workers among rural workers between 1991-2001, WPRs for rural population in the district have risen slightly, as the number of marginal workers in the rural

workforce has risen sharply. This corresponds to the trends exhibited through the state and nation. But the extent of decadal increment in WPR in total works was lower in the district than in the state or the nation on account of its relatively larger decadal decline in the WPR in main works compared to the state or the nation. Hence, over this period the economic dependency of the population had enlarged by larger extent in the district than in the state or the nation. Since the number of rural workers in the aggregate also rose dramatically in absolute terms in all district blocks along with decrease in the size of main workers in all hill blocks, this would indicate that a considerable proportion of new entrants into the rural workforce of the district have only been able to find short-term or casual work opportunities. The slight expansion of the workforce in the district has not been sufficient to bring the very poor sections of its people out of poverty because the marginal character of new work opportunities. The rise in rural WPR in such circumstances indicates that the entry of new workers results from the intensification of livelihood pressure in the rural tract of the district, especially in the hill agricultural blocks, rather than because of the expansion of livelihood opportunities overall.

Besides providing immense unremunerated services towards caring family members as family commitment in the household core, women contribute indirectly to the work productivity of family earners as unpaid labour. Additionally, they contribute directly to production by participating personally in the work process as paid labour, or by supporting and supplementing the direct work contributions of family earners through additional unpaid labour, especially in rural areas, where agricultural or artisanal activity is carried out collectively by family labour. But in the yardstick of generating direct personal income only the paid labour contribution of women is considered as work and any women so engaged is regarded as female worker in Census, keeping aside many women who provide unpaid labour in the name of non-workers. Thus, because of their gender-typical roles as care takers and home-makers in general, many women do not enter into the Census definition of 'workers' at all, and thereby their participation in paid work is much lower than their male counterparts. Of those that do, many perform marginal rather than main work, because they continually have to balance family commitments against livelihood opportunities. Hence, women WPRs are expected to be smaller than male WPRs in all works in general and main works in particular. The information on gender dimension of work participation rate in Darjeeling blocks is provided in Table 3.9.

In 2001, the WPR in the aggregate works was around 22 per cent for women against around 49 per cent for male in the district, and thereby substantial gender gap in work participation in the aggregate works in relative terms was present, with more WPR for rural women than for urban women in the aggregate and main works in conformity to the state and the nation. However, mainly because of relatively more employment opportunities for women than men in tea-plantation, such gender gap was smaller in the district than in the state. Because of dominating relative presence of men than female in main works, the gender differential in work participation in main and aggregate works in relative terms was overwhelmingly tilted for men in the district blocks. But, in most district blocks, the gender differential in work participation in marginal works in relative terms was tilted for women because of larger proportional involvement of women than men in marginal works.

One positive aspect of women's active involvement in economic work in this district was their relatively greater participation in secured main works than unsecured marginal works, although it indicates their pressurised situation, other than a comfort one. The women WPR in main works was relatively lower and the gender discrepancy in work participation in main works in relative terms was comparatively higher in the plain blocks than the hill blocks. This would imply that in plain blocks most available main work opportunities were taken up by men. The women WPR in main works was relatively greater and gender discrepancy in WPR in main works were relatively lower in most hill tea blocks than in hill agricultural blocks because of easy absorption of female workers in tea plantation and thereby more female job opportunities in the former blocks than in the latter blocks. In the hill agricultural blocks, rural livelihoods are still primarily sustained by crop cultivation which offers limited main work

Table 3.9: Gender & Work Participation Patterns in Darjeeling Blocks 2001

CD Block/ District	Workers						Work Participation Rate [WPRs] (%)					
	All Workers		Main Workers		Marginal Workers		All Workers		Main Workers		Marginal Workers	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
<i>Principal Agricultural Hill Blocks</i>												
Kalimpong-1	17441	9671	14209	5276	3232	4395	50.7	29.0	41.3	15.8	9.4	13.2
Kalimpong-2	15171	8918	12209	4620	2962	4298	48.5	30.8	39.0	16.0	9.5	14.8
Gorubathan	13533	9315	10548	5423	2985	3892	49.1	34.9	38.3	20.3	10.8	14.6
<i>Principal Tea-Growing Hill Blocks</i>												
Darjeeling-Pulbazar	26927	18749	22298	13822	4629	4927	46.1	32.7	38.2	24.1	7.9	8.6
Rangli-Rangliot	13105	7626	10976	5488	2129	2138	40.6	23.8	34.0	17.1	6.6	6.7
Jorebunglow-Sukhiapokhri	19498	14432	16179	11853	3319	2579	39.1	28.4	32.5	23.3	6.7	5.1
Mirik	9131	6962	7245	4829	1886	2133	43.3	33.0	34.3	22.9	8.9	10.1
Kurseong	18907	11746	15855	9013	3052	2733	43.6	27.6	36.6	21.2	7.0	6.4
<i>Plains Blocks</i>												
Matigara	35676	11387	33048	8577	2628	2810	52.5	18.6	48.6	14.0	3.9	4.6
Naxalbari	38153	10652	35096	8322	3057	2330	50.3	15.4	46.3	12.0	4.0	3.4
Kharibari	23945	10181	20735	4865	3210	5316	52.7	23.8	45.6	11.4	7.1	12.4
Phansidewa	43483	18725	38780	12910	4703	5815	49.4	22.4	44.1	15.4	5.3	7.0
Darjeeling Rural	266736	136503	229942	93481	36794	43022	48.5	25.7	41.3	17.6	6.6	8.8
Darjeeling DT	402970	166472	359110	119741	43860	46731	48.5	21.4	43.2	15.4	5.3	6.0

Source: Darjeeling District Census Report- 2001

opportunities to rural women. Since women's work in agricultural families is largely unpaid, it does not enter the Census definitions of main work. The situation alters quite dramatically in the case of marginal works.

The women absorbed greater than 50 per cent marginal works in most district blocks. With easy absorption in family agriculture, women WPR in marginal works was relatively higher in the hill agricultural blocks than in other blocks, especially the hill tea blocks where the marginal women workers were casual tea-plantation workers. Nevertheless, besides Darjeeling-Pulbazar and Rangli-Rangliot, in all district blocks where male WPR in main works was relatively high, female WPR in main works was relatively low. Therefore, besides these three blocks, in all other blocks because of economic pressure rural women are compelled to seek paid economic work. Although economic and population pressures compel the members of rural families to seek economic work are felt in equal measure by both men and women, for rural women, the opportunities in main work are strongly limited by the large presence of male workers seeking out opportunities for economic work. Thus it is hypothesised that agricultural diversification will lead to increasing women's participation in labourforce by creating more job opportunities in agriculture and allied activities, especially floriculture, for women in all district blocks, particularly in the non-tea-growing hill blocks Kalimpong-1 and Kalimpong-2.

In the 2001 Census, workers were distributed over four occupational categories, comprising cultivators and agricultural labourers, household industrial workers and other workers engaged in other activities. The sectoral composition of the workforce over the Darjeeling blocks in 1991 and 2001 are outlined in Table 3.10. In 2001, 18.5 and 32.5 per cent lower agricultural workers in aggregate workers was absorbed in the crop sub-sector in the district than in the state and the nation respectively, mainly because of substantial expansion of Siliguri Municipality Corporation, low per capita availability of cropland and prominent presence of tea-hectareage in the district, especially in tea hill blocks. Besides Kalimpong-1 and Kalimpong-2, in all the blocks the presence of tea-hectareage within cultivable land

Table 3.10: Sectoral Composition of Workforce in Darjeeling Blocks 1991 & 2001

CD Block/ District	Proportion of Total Workers (%)							
	2001				1991			
	Cultivators	Agricultural Labourers	Household Industrial Workers	Other Workers	Cultivators	Agricultural Labourers	Household Industrial Workers	Other Workers
<i><u>Principal Agricultural Hill Blocks</u></i>								
Kalimpong-1	46.2	16.2	3.8	33.7	61.3	16.0	0.5	22.2
Kalimpong-2	51.7	19.1	2.9	26.3	72.6	5.8	0.3	21.3
Gorubathan	33.0	16.4	9.0	41.6	53.0	11.6	0.2	35.2
<i><u>Principal Tea-Growing Hill Blocks</u></i>								
Darjeeling-Pulbazar	36.9	11.4	1.8	49.9	42.9	7.6	0.4	49.1
Rangli-Rangliot	17.9	19.1	3.9	59.2	23.1	12.0	0.5	64.4
Jorebunglow-Sukhiapokhri	8.1	7.9	4.0	80.0	15.3	6.4	0.3	78.0
Mirik	19.6	7.7	3.0	69.8	14.4	3.0	0.2	82.5
Kurseong	12.5	7.6	2.5	77.4	23.2	7.2	0.2	69.4
<i><u>Plains Blocks</u></i>								
Matigara	5.2	4.0	2.2	88.6	–	–	–	–
Naxalbari	8.6	8.1	1.7	81.6	–	–	–	–
Kharibari	24.0	31.0	4.2	40.8	–	–	–	–
Phansidewa	15.7	21.3	1.7	61.3	–	–	–	–
Darjeeling Rural	21.7	14.3	3.0	61.0	33.5	16.0	0.5	50.0
Darjeeling DT	15.5	10.2	2.8	71.5	24.9	12.2	0.6	62.3

Source: Darjeeling District Census Report- 2001

and inclusion of tea-plantation workers within other workers make the relationship between per capita relative availability of cropland and per cent of agricultural workers in total workers complex.

Thus, cropland per agricultural worker does not bear real sense in such blocks. In addition to this land-use oddity of cropland, the inter-block variation in per capita cropland was substantial, ranging from the lowest value of 0.064 ha in the most densely populated plain block Matigara to 0.282 ha in Gorubathan, 0.201 ha in Kalimpong-1 and 0.119 ha in Kalimpong-2. Consequently, only 7.4 per cent workers were engaged in cropping in Matigara-Naxalbari, while it was highest at 70.8 per cent in Kalimpong-2. The percentages of agricultural workers as well as cultivators were relatively higher in the hill agricultural blocks than in most hill tea and plain blocks. Hence, relative accessibility of cultivable land along with land-use oddity substantially determined the extent of working population depended on cropping for their livelihood in Darjeeling blocks. Between cultivators and agricultural labourers, the former is superior to the latter, and from this perspective the position of the plain block Kharibari and Phansidewa was the worst among the district blocks, since in these blocks the proportion of agricultural labourers to total workers exceeded the per cent of cultivators, while this feature was missing in most other blocks.

Because of the limited opportunities of absorbing workers in the other industrial activities, relatively larger per cent workers were involved in household industries [HHI] in most hill blocks than in most plain blocks. Nevertheless, mainly because of absence of tea-hectare in Kalimpong-1 and Kalimpong-2 and limited presence of tea-hectare in Gorubathan, the percentage of workers engaged in other works was relatively lower in the hill agricultural blocks than in the hill tea blocks as well as most plain blocks. It was highly marked at 85 per cent in the plain block Matigara mainly because of its capacity of absorbing workforce in diversified industries and services as consequences of urbanisation of its parts and being adjacent to Siliguri Municipality Corporation, in addition to allied agricultural activities, mainly in the field of tea-plantation. However, this was least marked at 26.3 per cent in Kalimpong-2 for the opposite reasons. Between two non-tea-growing hill blocks Kalimpong-1 and Kalimpong-2, the percentage of other workers in total workers was comparatively higher in the former than in the latter as the former blocks provided more non-agricultural job opportunities than the latter because it is adjacent

to Kalimpong Municipality. Thus, urbanisation played a critical role in absorbing workforce in other industrial works in the blocks.

Besides hill agricultural blocks, in other blocks the opportunity for absorbing workforce in cropping is limited. Because of relatively higher degree of utilisation of cropland as well as low productivity of traditional crops, the scope of generating additional employment in the crop sub-sector is also blocked in hill agricultural blocks when each hectare cropland already engages between 1-2 agricultural workers on the average. Hence, the district is now opted for a major occupational shift from farm to non-farm activities. Because of generation of 61.45 thousands new non-agricultural job opportunities for main workforce in the rural part of the district as well as absolute and relative decline in agricultural job opportunities between 1991-2001, the percentages of non-agricultural main and total workers in the main and aggregate workers respectively have increased in most district blocks. However, such new non-agricultural job opportunities in main works were not evenly distributed among the blocks. Besides Darjeeling-Pulbazar and Rangli-Rangliot, in all blocks although the non-agricultural job opportunities for main workers increased over this period, but 84 per cent of such new job opportunities was concentrated in plain blocks and 12.9 per cent in the hill agricultural blocks. Hence, in the present economic setup the capacity of absorbing workforce in the secured non-agricultural activities was also limited in its hill blocks, particularly in the current tea-crisis situation. Thus, it is hypothesised that agricultural diversification in terms of high value off-seasons vegetables and across different sub-sectors of agriculture through utilising production niche will fruitfully absorb the people of the district, especially in its hill tract through the generation of new job opportunities in the farm sector as well as the growth of rural non-farm employment through farm and non-farm linkages.

The gender dimension of sectoral composition of workforce enables to scrutinise gender differential in WPRs and to manifest other dimensions of gender differential in the relatively differential presence of male and female workforce in four work-categories, especially other work. Despite limited main work opportunities for rural women in cropping, relatively larger per cent women main workers was confined in agricultural than in non-agricultural activities in the non-tea-growing hill blocks Kalimpong-1 and Kalimpong-2, because of their further limitation to absorb in non-agricultural activities in face of lack of such job opportunities. In the hill agricultural blocks, the proportion of female main agricultural workers to total female main workers was larger than their male counterpart, and conversely the proportion of male non-agricultural main workers to total male main workers was greater than their female counterpart. But the opposite scenario regarding gender dimension of sectoral composition of main workforce is observed in all other district blocks, mainly because of the existence of job opportunities in allied agriculture, particularly tea-plantation for women.

3.3 Hamlet-level Analysis

As the hamlet names indicate, of the 12 sample hamlets Lepcha Gaon, Poshyore, Yogda and Bimbong are Lepcha hamlets, while the rest are Nepali hamlets. Since the Lepchas were the original inhabitants of the study region, and the Bhutias and Nepalis are later migrants (O' Malley, *op. cit.*), the Lepcha settlements are much older than the others. The hamlets are now identified by other names, according to their dominant communities. Thus Poshyore and Lepcha Gaon are known as *Lepcha* villages, Upper Gairi Gaon as a *Bhutia* village, Lower Gairi Gaon as a *Thapa* (Magar) village, Sundung as a *Subba* (Limbu) village, Khawas Gaon as a *Bhujel* village, Bimbong, Yogda and Mahakaldara as *Rai* villages, and Lamini Gaon, Ramitay and Chisopani as Chettri villages. The hamlets vary substantially in relative locational characteristics. Generally, the Lepchas reside in at low elevation, while the Bhutias prefer higher elevation. As shown in Table 3.11, the study hamlets may be grouped by grading their relative locational characteristics.

Table 3.11: Village Grading on Relative Locational Characteristics

Hamlet Groups	SORTING SCALES					
	Distance	Elevation	Aspect	NCA	Irrigation Access	Slope Degree
High						
Chisopani Lamini Gaon Ramitay	Bimbong Khawas Gaon Lepcha Goan Lwr Gairi Goan Ramitay Poshyore	Chisopani Khawas Goan Lepcha Goan Poshyore Ramitay	Bimbong Khawas Goan Poshyore	Chisopani Khawas Goan Lepcha Goan Lwr Gairi Goan Poshyore Ramitay Sundung	Lepcha Goan Poshyore Sundung	
Medium						
Lepcha Goan Mahakaldara Poshyore Sundung	Chisopani Lamini Goan Sundung Yogda	Lwr Gairi Goan Sundung Upr Gairi Goan	Chisopani Lamini Goan Ramitay Sundung Yogda	Bimbong Upr Gairi Goan Yogda	Khawas Goan Lwr Gairi Goan Ramitay	
Low						
Bimbong Lwr Gairi Goan Upr Gairi Goan Yogda	Mahakaldara Upr Gairi Goan	Bimbong Lamini Goan Mahakaldara Yogda	Lepcha Goan Lwr Gairi Goan Mahakaldara Upr Gairi Goan	Lamini Goan Mahakaldara	Bimbong Chisopani Lamini Goan Mahakaldara Upr Gairi Goan Yogda	

3.3.1 Demographic Profile

Table 3.12 presents comparative demographic characteristics of the study villages.

Table 3.12: Demographic Characteristics of the Selected Hamlets

Study Hamlet	Households (Number)	Population			Average Family Size	Female per 1000 Male [FMR]
		Total*	Male	Female#		
<i>Hamlets of SC & ST Population > 50%</i>						
Lepcha Gaon	25	165	72	93	6.6	1292
Sundung	25	133	67	66	5.3	985
Poshyore	25	153	74	79	6.1	1068
Upper Gairi Gaon	25	134	67	67	5.4	1000
Yogda	25	168	90	78	6.7	867
<i>Hamlets of SC & ST Population between 25% to 50%</i>						
Bimbong	25	146	73	73	5.8	1000
Chisopani	25	155	83	72	6.2	867
Ramitay	25	143	75	68	5.7	907
<i>Hamlets of SC & ST Population < 25%</i>						
Lamini Gaon	25	160	79	81	6.4	1025
Lower Gairi Gaon	25	140	71	69	5.6	972
Khawas Gaon	25	138	69	69	5.5	1000
Mahakaldara	25	156	80	76	6.2	950
Total Selected Villages	300	1791	900	891	6.0	990

Source: Sample Survey

*excl. long term migrants; # excl. nuptial out-migrating women, but incl. nuptial incoming women

Out of the 300 farmer households selected, 10.7 per cent belonged to the *extended family* type and 8.3 per cent to the *joint family* type. As a result, average family-sizes in the sample were greater than average family sizes in the blocks from which the villages were selected. Family size of the farm

households was high in most villages surveyed, particularly in villages with higher SC/ST populations like Yogda and Lepcha Gaon. Family size generally exceeded 6 where the proportion of joint and extended households in the villages was 24 per cent or more, except in the tribal hamlet of Yogda which accounted for the highest family size despite having only 12 per cent of its households in joint and extended family type. Social factors such as caste and family type also play critical roles in determine family size in the study region.

The ratio of females to males (FMR) was generally female deficient in most villages. A surplus of females in the population only existed in the tribal hamlets of Lepcha Gaon and Poshyore, and in agriculturally backward Lamini Gaon. FMRs were generally higher in villages with larger SC/ST presence like Lepcha Gaon. Besides economic factors like migration, FMRs are also influenced by social factors like religion, caste and community. Within the sample, 59.7 per cent the households were Hindu by religion with an FMR of 937 compared to 1070 for other religions. For the SC sample of 2.7 per cent of all selected households, FMR was much lower at 767, compared to 1065 for the 37.3 per cent of ST households and 958 for non-SC/ST households, in conformity with other studies (e.g. Chandran, 2012). Greater presence of ST households in the household sample improved the FMR. FMRs also varied across communities. Thus 18 per cent of the sample were tribal Lepcha households with FMR of 1108. For households from other communities, FMR fell to 966.

Table 3.13 shows comparative children population, age, education and literacy among the hamlets.

Table 3.13: Child Population, Age, Education & Literacy Comparisons between Sample Villages

Study Hamlets	Children (0-6) years in Total Population (%)	Education Level of Household Head	Age of Household Head (years)	Mean Household Literacy Rate (%)			Gender Disparity in Literacy (%)
				Total	Male	Female	
<i>Hamlets with SC & ST Population >50%</i>							
Lepcha Gaon	10.91	6.44	54.5	87.07	92.06	83.33	8.73
Sundung	4.51	6.24	52.1	85.04	95.38	74.19	21.19
Poshyore	6.54	4.56	50.1	83.22	90.14	76.39	13.75
Upper Gairi Gaon	7.46	8.00	50.0	90.32	96.88	83.33	13.55
Yogda	10.71	4.16	48.4	84.00	91.03	76.39	14.64
<i>Hamlets with SC & ST Population between 25% to 50%</i>							
Bimbong	9.59	4.36	44.1	78.03	84.85	71.21	13.64
Chisopani	7.10	8.80	59.5	93.06	96.00	89.86	6.14
Ramitay	8.39	5.36	57.4	83.97	90.41	75.86	14.55
<i>Hamlets with SC & ST Population <25%</i>							
Lamini Gaon	8.75	5.52	50.1	78.77	84.93	72.60	12.33
Lower Gairi Gaon	9.29	5.44	54.3	82.68	85.48	80.00	5.48
Khawas Gaon	12.32	4.84	49.0	82.64	85.00	80.33	4.67
Mahakaldara	3.85	4.88	54.7	86.67	90.91	82.19	8.72
Total Selected Villages	8.32	5.72	52.0	84.65	90.33	78.90	11.43

Source: Sample Survey

The proportion of child dependents in the age-group 0-6 years was low in most studied hamlets. However, this was comparatively greater in most hamlets with relatively lower mean age of household heads like Khawas Gaon. This was lower in most hamlets with comparatively higher mean education level of household heads like Chisopani and Sundung. The literacy was high in the hamlets surveyed with wide variation. This was comparatively higher in the hamlets than the respective blocks from where the hamlets were selected, mainly because such blocks have contained more remote villages with relatively lower literacy. With greater access to education in hamlets located closer to the market centre, generally the literacy along with male literacy were relatively higher in such hamlets like Chisopani and Lepcha Gaon, and lower in most hamlets located further way from the market centre like Bimbong. The literacy was second lowest in the nearer distance hamlet Lamini Gaon mainly because of its relatively

low mean education level of household heads and second largest family size, whereas this was second highest in the high distance hamlet Upper Gairi Gaon mainly because of its lowest family size and second highest mean education level of household heads. The hamlets where the mean education level of household head was above class VI, the literacy was above 85 per cent, but it was below 84 per cent in the hamlets where the mean education level of household head was below class VI, and the incidence of most non-caste population hamlet Mahakaldara is an exception. Hence, besides economic capacity of household heads for providing education opportunities to family members, their mean education level as well as the relative remoteness of the hamlets from Kalimpong market, however, have played critical role to determine the literacy. Nevertheless, this intra and inter hamlets variability in literacy has generated differential impact on their economic livelihood and agricultural activities, and it is thus hypothesised that the agricultural and livelihood choices of literate farmers tend to be more diversified than the illiterate farmers.

Despite acquiring high female literacy in all the hamlets, moderate degree of gender discrepancy in literacy still persists. The female literacy was relatively lower and gender disparity in literacy was comparatively higher in most hamlets with caste population like Sundung than in most hamlets with non-caste population like Mahakaldara, Chisopani and Khawas Gaon. Despite being tribal hamlet, the female literacy was high and gender disparity in literacy was low in Lepcha Gaon. The gender disparity in literacy was comparatively greater in most hamlets located further away from the market centre like Bimbong. The female literacy was highest and gender discrepancy in literacy was second lowest in the low distance, non-caste population Chisopani where male literacy and mean education level of household heads were also highest, while the former was lowest in the high distance hamlet Bimbong where the male literacy and mean education level of household heads were also lowest. Livelihoods also varied across caste & community groups.

Table 3.14 shows community breakup of the population in the hamlets.

Table 3.14: Caste-composition of Sample Population

Study Hamlets	Proportion to Total Population (%)			
	ST	SC	OBC	General
<i><u>Hamlets with SC & ST Population >50%</u></i>				
Lepcha Gaon	83.6	0.0	6.7	9.7
Sundung	55.6	15.0	6.8	22.6
Poshyore	66.0	0.0	16.3	17.7
Upper Gairi Gaon	53.7	4.5	20.2	21.6
Yogda	54.8	0.0	45.2	0.0
<i><u>Hamlets with SC & ST Population between 25% to 50%</u></i>				
Bimbong	46.6	0.0	53.4	0.0
Chisopani	22.6	7.1	18.1	52.2
Ramitay	25.9	0.0	35.0	39.1
<i><u>Hamlets with SC & ST Population <25%</u></i>				
Lamini Gaon	21.3	3.1	24.4	51.2
Lower Gairi Gaon	10.0	0.0	24.3	65.7
Khawas Gaon	0.0	8.0	49.3	42.7
Mahakaldara	0.0	0.0	70.5	29.5
All Selected Villages	37.1	3.0	31.0	28.9

Source: Sample Survey

Among the tribal population the Lepcha community was dominant, and besides the moderate distance hamlet Sundung where the Limbu sub-community were the majority and the high distant hamlet Upper Gairi Gaon where the Bhutia community was dominant, in all the caste population dominated hamlets

the Lepcha were the majority. In other backward caste [OBC] population the Rai sub-community occupied dominancy, and besides the moderate distance hamlet Khawas Gaon where the Bhujel sub-community was the majority, in other OBC population dominated hamlets the Rai sub-community was the majority. Within the general caste population, the Chettri community was in the majority. Hamlets like Chisopani which were nearer to market centres were dominated by non-SC/OBC populations, particularly the general castes.

Family sizes in SC households were relatively high at 6.6, against 5.9 and 6.0 for ST and non-SC/OBC households. Mean education levels of household heads was relatively low at class 5 level for SC households, against class 6+ for ST households and class 5-6 level for non-SC/OBCs. Consequently, literacy was also high at 86.1 per cent for the ST population, against 82.2 and 83.9 per cent respectively for the SC and non-SC/OBC population in Kalimpong Block-1 from where two-thirds of the sample hamlets were selected. Gender differentials in literacy were also more pronounced at 20.2 per cent among the SC population, and relatively comparable at 11.1 and 11.4 per cent respectively for the ST and non-SC/OBC population.

Table 3.15: Land Holding-size-wise Demographic Features of the Sample Population

Landholding Size-classes	Total Households	Household Population			Avg Family Sizes	Mean Age of Household Heads (years)	Overall Literacy (%)
		Total	Males	Females			
upto 1 acre (≤ 0.405 ha)	106	572	284	288	5.4	49.5	86.4
1-3 acres (0.405-1.214 ha)	152	914	457	457	6.0	52.6	84.6
above 3 acres (> 1.214 ha)	42	305	159	146	7.3	56.3	81.3
All Sample Households	300	1791	900	891	6.0	52.0	84.7

Source: *Sample Survey*

As shown in Table 3.15, demographic characteristics also varied across holding-size categories. Family-size grew gradually with increasing holding-size, hence larger families were supported by larger landholdings in conformity with other studies in the literature (Rao and Charyulu, *op. cit.*). An inverse relationship was observed between literacy and landholding-size however, as most households with comparatively large-sized holdings reside in the more distant hamlets with lower access to education. This implies that inequalities in the size-distribution of operational holdings are somehow counterbalanced by the acquisition of higher literacy in households with smaller-sized holdings. An inverse relationship between land holding-size and FMR also exists, and younger household heads possessed smaller lands than older household heads.

3.3.2 Lands in Relation to Human Settlement

With reference to their elevation, slope gradients, soil textures and the water-holding capacity of croplands during the rains, the study hamlets were classified into three subgroups, namely

- (i) *high irrigation access hamlets*, with considerable cultivated wetland (≥ 34.5 % of cultivated land) during the rainy season and an irrigated to cropland ratio $> 36\%$;
- (ii) *moderate irrigation access hamlets*, with limited cultivated wetland (≤ 9.8 % of cultivated land) during the rainy season and an irrigated to cropland ratio $> 5\%$, but $< 13\%$
- (iii) *low irrigation access hamlets*, with no cultivated wetland during the rains and an irrigated to cropland ratio $< 5\%$.

The hamlets Ramitay, Chisopani, Lepcha Gaon, Khawas Gaon, Poshyore, Sundung and Lower Gairi Gaon composed the first sub-group, Yogda, Bimbong and Upper Gairi Gaon formed the second sub-

group, while Lamini Gaon and Mahakaldara were in the third sub-group. Table 3.16 compares the land-man relationship across the study hamlets.

Table 3.16: Land-man Features in the Study Hamlets

Study Hamlets	Total Household Population	Total Household Land (ha)	Net Cultivated Area (ha)	Land-man Ratio (ha)	Per capita NCA (ha)
<i><u>Hamlets with SC & ST Population > 50%</u></i>					
Lepcha Gaon	165	16.53	12.66	0.100	0.077
Sundung	133	14.70	11.62	0.111	0.087
Poshyore	153	20.84	16.60	0.136	0.109
Upper Gairi Gaon	134	13.84	9.45	0.103	0.071
Yogda	168	21.33	14.25	0.127	0.085
<i><u>Hamlets with SC & ST Population between 25% to 50%</u></i>					
Bimbong	146	30.79	19.24	0.211	0.132
Chisopani	155	17.48	13.13	0.113	0.085
Ramitay	143	16.49	12.72	0.115	0.089
<i><u>Hamlets with SC & ST Population < 25%</u></i>					
Lamini Gaon	160	25.72	14.78	0.161	0.092
Lower Gairi Gaon	140	17.92	10.97	0.128	0.078
Khawas Gaon	138	21.15	16.36	0.153	0.119
Mahakaldara	156	20.52	11.85	0.132	0.076
Total Selected Villages	1791	237.30	163.62	0.133	0.091

Source: Sample Survey

Land-man ratios (*viz.* the reciprocal of population density) were generally low but varied between hamlets. Land-man ratios in the hamlets were also relatively lower than land-man ratios for the blocks from which they were selected, indicating that the agricultural villages in the blocks are more densely populated. Land scarcity was higher in villages like Lepcha Gaon where the SC/ST communities were dominant and lower in villages like Bimbong. Generally, because human settlement was more dense in villages located at closer distance to market centres like Chisopani, land-man ratios were lower there, and were higher in the hamlets at greater distance. The land-man ratio was also relatively higher in Lamini Gaon where most farmland was situated on high-degree slopes. Again, per capita availability of cropland was low in villages with steep topography or higher irrigation access. Since, compared to wetland fields, a larger area of dryland is required for sustaining a farm family, settlement density therefore was higher in villages with better irrigation access. However, not all superior land available was utilised for cropping in villages with lower access to irrigation. While the high land-man ratio at Bimbong was also reflected by its highest per capita cropland availability, the difference between per capita availability of land and cropland was substantial because of the retention of uncultivable barren land as permanent fallows. This characteristic was also mimicked in other villages with an inferior slope aspect.

Inter-hamlet differences in land-use patterns have been analysed in Table 3.17. With substantial population pressure on land, the relative land commitment to cultivation was high, but land under forests, culturable wasteland and uncultivable land was low in the villages studied. Because of greater land scarcity in villages where the SC castes were more dominant, the extent of land committed to cultivation was higher in villages like Poshyore and lower in villages where the non-SC/OBC population was more dominant. Conversely, the opposite was true in case of land commitment to forests and culturable wastelands. On an average, each ha. of forest had to yield 12 kg of leaf-fodder annually to partially meet the fodder needs of 2.6 cattle and 116 kg of fuelwood to meet the energy need of each household, besides having to meet the timber need of the households. Because of substantial pressure, the forest lands were degraded, which compelled poorer households to enter the Government reserve forests illegally. Any further expansion of human and livestock populations would make the situation of

hill forests more precarious. Because of the relatively unsuitable gradients, higher elevation or rocky-soil-profiles in villages with lower access to irrigation, the ratio of uncultivable land to total land in such

Table 3.17: Land-use Pattern in Sample Villages

Hamlet	Total Land (ha)	Forest Land (ha)	Net Cultivated Area [NCA] (ha)			Cultur-able Waste Land (ha)	Area Unavail-able for Cultiva-tion (ha)	Forest Land to Total Area (%)	Cultiva-ted Land to Total Area (%)	Net Cultivated Area		Cultur-able Waste Land to Total Area (%)	Area Unavail-able for Cultiva-tion to Total Area (%)
			Total	Irriga-ted	Unirri-gated					Irriga-ted (%)	Unirrig-ated (%)		
<i>Hamlets with SC & ST Population >50%</i>													
Lepcha Gaon	16.53	0.93	12.66	8.27	4.39	0.40	2.55	5.6	76.5	65.3	34.7	2.4	15.4
Sundung	14.70	0.71	11.62	7.27	4.34	0.21	2.16	4.8	79.0	62.6	37.4	1.4	14.7
Poshyore	20.84	1.01	16.60	6.11	10.50	0.38	2.84	4.9	79.7	36.8	63.2	1.8	13.6
Upper Gairi Gaon	13.84	1.16	9.45	0.57	8.88	0.46	2.77	8.4	68.3	6.0	94.0	3.3	20.0
Yogda	21.33	1.30	14.25	1.80	12.45	0.33	5.45	6.1	66.8	12.6	87.4	1.6	25.5
<i>Hamlets with SC & ST Population between 25% to 50%</i>													
Bimbong	30.79	2.39	19.23	0.79	18.45	0.91	8.25	7.8	62.5	4.1	95.9	3.0	26.8
Chisopani	17.48	1.39	13.13	10.34	2.78	1.01	1.95	7.9	75.1	78.8	21.2	5.8	11.2
Ramitay	16.49	1.51	12.72	12.12	0.60	0.68	1.58	9.2	77.1	95.3	4.7	4.1	9.6
<i>Hamlets with SC & ST Population <25%</i>													
Lamini Gaon	25.72	1.43	14.78	1.42	13.36	1.85	7.66	5.6	57.4	9.6	90.4	7.2	29.8
Lower Gairi Gaon	17.92	1.28	10.97	4.05	6.92	0.25	5.42	7.1	61.2	36.9	63.1	1.4	30.2
Khawas Gaon	21.15	0.82	16.36	13.84	2.52	0.22	3.76	3.9	77.4	84.6	15.4	1.0	17.8
Mahakaldara	20.52	1.66	11.85	0.00	11.85	1.54	5.47	8.1	57.8	0.0	100.0	7.5	26.6
All Selected Villages	237.30	15.59	163.62	66.57	97.05	8.25	49.85	6.6	68.9	40.7	59.3	3.5	21.0

Source: Sample Survey

villages like Bimbong and Lamini Gaon was higher than in villages like Ramitay with better irrigation access. Conversely, the relative land commitment to cultivation was greater in villages with higher irrigation access. Households in less irrigated hamlets had to depend more on allied agricultural activities like livestock farming.

Culturable wastelands hold immense importance for hill farmers in meeting household needs for green fodder, bamboo and *kucho* (broomgrass) production, and also for expansion cultivation to accommodate high rates of population growth. In most study-hamlets, the presence of culturable wasteland was meagre. With the maximisation of cultivated land in adverse physiographic conditions in the hill region, extensification of cultivation is hardly possible today. Topographic constraints and ecologically fragile environments also constrain agricultural development on the intensive margin because of potential breakdown in existing resource-use practices, thereby leading to unsustainability. Appropriate agricultural diversification would thus enlarge agricultural incomes in the study region, while helping to maintain the sustainability of natural resource-use by mountain farming communities.

Because of limited nature of *jhora* irrigation and the steep slope characteristics of cropland, the ratio of irrigated to total cropland was extremely low in villages like Bimbong and Mahakaldara. Limited access to irrigation thus imposed additional constraints on agricultural development in the mountain region. Access to irrigation varied according to differences between study hamlets in elevation, land-gradients and *jhora* access. These had differential impacts on cropping patterns, cropping intensity, agricultural diversification options, and livelihood choices in the study villages. Because of inadequate irrigation access, land-based agricultural diversification was expectedly limited in the less irrigated villages.

Existing land scarcity in the study region is also reflected in the size-distributions of agricultural holdings in Table 3.18. This revealed the clustering of hill farms in the size below 2 ha also having a high presence of extremely small holdings below 1 ha. Such clustering was more common in villages

with less SC/ST domination like Bimbong, and also in villages with higher irrigation access like Ramitay and Sundung. The greater proportion of agricultural holdings below 1 ha in size occurred in villages where land-man ratios were also relatively low.

Table 3.18: Size-Distribution of Agricultural Holdings in the Hamlets

Villages	Landholding Classes		
	Less than 1 ha	1-2 ha	2-4 ha
<i><u>Villages with SC & ST Population>50%</u></i>			
Lepcha Gaon	84.0	16.0	0.0
Sundung	88.0	12.0	0.0
Poshyore	60.0	32.0	8.0
Upper Gairi Gaon	84.0	16.0	0.0
Yogda	64.0	32.0	4.0
<i><u>Villages with 25%- 50% SC & ST Population</u></i>			
Bimbong	36.0	44.0	20.0
Chisopani	72.0	28.0	0.0
Ramitay	80.0	20.0	0.0
<i><u>Villages with SC & ST Population<25%</u></i>			
Lamini Gaon	52.0	28.0	20.0
Lower Gairi Gaon	80.0	16.0	4.0
Khawas Gaon	68.0	24.0	8.0
Mahakaldara	72.0	20.0	8.0
All Villages	70.0	24.0	6.0

Source: Sample Survey

3.3.3 Economic Livelihood Pattern

The economic livelihood patterns initially captured in work participation rates (WPRs) for the study villages are shown in Table 3.19.

Table 3.19: Population and Workforce in Study Villages

Villages	Workers				Work Participation Rates [WPR %]		
	Total Population	All Workers	Main Workers	Marginal Workers	All Workers	Main Workers	Marginal Workers
<i><u>Villages with SC & ST Population>50%</u></i>							
Lepcha Gaon	165	99	65	34	60.0	39.4	20.6
Sundung	133	78	46	32	58.6	34.6	24.1
Poshyore	153	95	58	37	62.1	37.9	24.2
Upper Gairi Gaon	134	73	47	26	54.5	35.1	19.4
Yogda	168	86	55	31	51.2	32.7	18.5
<i><u>Villages with 25% -50% SC & ST Population</u></i>							
Bimbong	146	83	48	35	56.8	32.9	24.0
Chisopani	155	81	58	23	52.3	37.4	14.8
Ramitay	143	86	57	29	60.1	39.9	20.3
<i><u>Villages with SC & ST Population<25%</u></i>							
Lamini Gaon	160	91	62	29	56.9	38.8	18.1
Lower Gairi Gaon	140	88	52	36	62.9	37.1	25.7
Khawas Gaon	138	78	45	33	56.5	32.6	23.9
Mahakaldara	156	91	57	34	58.3	36.5	21.8
All Villages	1791	1029	650	379	57.5	36.3	21.2

Source: Sample Survey

The WPRs were relatively higher in the hamlets studied compared to the respective blocks in which they belong to, mainly because all sample households are farm households who generally feel more pressure for maintaining their subsistence compared to non-farm households. Mainly because of relatively less access to non-farm job opportunities in hamlets located further away from the market centres, the WPR in main works was relatively lower in such hamlets like Yogda and higher in hamlets located closer to the market centres like Lamini Gaon and Lepcha Gaon. With limited irrigation access and low crop cultivation activities in hamlets with lower irrigation access, this was comparatively lower in such hamlets like Yogda and Mahakaldara. With more crop cultivation activities and deployment of family labour in cropping in hamlets with better irrigation access, the WPR in marginal works was also comparatively greater in most such hamlets like Lower Gairi Gaon and Poshyore. Consequently, the WPR in the aggregate works was relatively higher in most hamlets with better irrigation access like Ramitay and Lower Gairi Gaon. With more economic pressure and limited main work opportunities in high distance hamlets like Lower Gairi Gaon and Bimbong, their WPR in marginal works was relatively higher. Thus, the availability of job opportunities and their nature, along with economic pressure, had played crucial role in determining relative work participation in the hamlets.

As shown in Table 3.20, WPRs also vary with gender populations in the study villages. The WPR for males surveyed in the aggregate works was around 65 per cent, against WPR of around 50 per cent for females. The gender gap in relative work participation was around 15 per cent for the study villages, lower than for the blocks from which the hamlets were selected for the study. Because of the dominant presence of males in main work, the gender differential in main WPR was overwhelmingly in favour of men. In case of marginal work, the WPRs favoured female workers. Males in the study villages thus had dominant work-roles as primary earners, while the females had less secure roles as subsidiary workers. Most work opportunities generated in agriculture were captured vigorously by the male main workforce, and females were able to make their presence felt through marginal work.

Table 3.20: Gender Work Participation in the Study Region

Study Hamlets	Workers						Work Participation Rate [WPR %]					
	All Workers		Main Workers		Marginal Workers		All Workers		Main Workers		Marginal Workers	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
<i><u>Villages with SC & ST Population > 50%</u></i>												
Lepcha Gaon	48	51	48	17	0	34	66.7	54.8	66.7	18.3	0.0	36.6
Sundung	40	38	39	7	1	31	59.7	57.6	58.2	10.6	1.5	47.0
Poshyore	49	46	47	11	2	35	66.2	58.2	63.5	13.9	2.7	44.3
Upper Gairi Gaon	44	29	43	4	1	25	65.7	43.3	64.2	6.0	1.5	37.3
Yogda	50	36	49	6	1	30	55.6	46.2	54.4	7.7	1.1	38.5
<i><u>Villages with 25%-50% SC & ST Population</u></i>												
Bimbong	46	37	42	6	4	31	63.0	50.7	57.5	8.2	5.5	42.5
Chisopani	56	25	49	9	7	16	67.5	34.7	59.0	12.5	8.4	22.2
Ramitay	50	36	47	10	3	26	66.7	52.9	62.7	14.7	4.0	38.2
<i><u>Villages with SC & ST Population < 25%</u></i>												
Lamini Gaon	54	37	50	12	4	25	68.4	45.7	63.3	14.8	5.1	30.9
Lower Gairi Gaon	50	38	49	3	1	35	70.4	55.1	69.0	4.3	1.4	50.7
Khawas Gaon	42	36	42	3	0	33	60.9	52.2	60.9	4.3	0.0	47.8
Mahakaldara	53	38	48	9	5	29	66.3	50.0	60.0	11.8	6.3	38.2
All Villages	582	447	553	97	29	350	64.7	50.2	61.4	10.9	3.2	39.3

Source: Sample Survey

Non-farm work opportunities for women are limited in hamlets located away from market centres. Thus, WPRs for females in main work were relatively lower in Lower Gairi Gaon and Yogda, and higher in Lepcha Gaon and Lamini Gaon which are nearer to the market centres. In villages with better irrigation access, absorption of females in family cultivation was easier. Marginal female WPRs were thus higher in the better irrigated hamlets like Lower Gairi Gaon and Poshyore. As work participation for males and females was more equal in the villages dominated by SC/STs, gender disparities in work participation were lower in villages like Lepcha Gaon and Poshyore.

Economic livelihood patterns in the study region are more precisely captured in the sectoral composition of workers in the study hamlets in Table 3.21.

Table 3.21: Sectoral Composition of Workforce in Study Villages

Study Hamlets	Aggregate Workers				Proportion of Total Workers (%)			
	Cultivators	Agricultural Labourers	Household Industrial Workers	Other Workers	Cultivators	Agricultural Labourers	Household Industrial Workers	Other Workers
<i>Hamlets with SC & ST Population > 50%</i>								
Lepcha Gaon	54	7	3	35	54.5	7.1	3.0	35.4
Sundung	39	2	4	33	50.0	2.6	5.1	42.3
Poshyore	54	9	6	26	56.8	9.5	6.3	27.4
Upper Gairi Gaon	42	1	3	27	57.5	1.4	4.1	37.0
Yogda	53	7	6	20	61.6	8.1	7.0	23.3
<i>Hamlets with 25% -50% SC & ST Population</i>								
Bimbong	59	2	6	16	71.1	2.4	7.2	19.3
Chisopani	44	1	0	36	54.3	1.2	0.0	44.4
Ramitay	55	3	3	25	64.0	3.5	3.5	29.1
<i>Hamlets with SC & ST Population < 25%</i>								
Lamini Gaon	57	1	3	30	62.6	1.1	3.3	33.0
Lower Gairi Gaon	61	4	0	23	69.3	4.5	0.0	26.1
Khawas Gaon	42	1	15	20	53.8	1.3	19.2	25.6
Mahakaldara	47	3	4	37	51.6	3.3	4.4	40.7
All Villages	607	41	53	328	59.0	4.0	5.1	31.9

Source: Sample Survey

The relative proportion of cultivators in aggregate workforce was higher and the relative proportion of agricultural labourers was lower in all study villages compared to the blocks from which they were selected, because the sample only comprised farm households who were absorbed primarily in crop cultivation. Per capita cropland varied from the relatively high 0.132 ha in the remote hamlet of Bimbong to the low of 0.071-0.076 ha in Mahakaldara and Upper Gairi Gaon respectively. Consequently, the proportion of workers engaged in agricultural work was only 54.9 and 58.9 per cent in these two villages. In Bimbong, this proportion reached 73.5 per cent, with the proportion of cultivators to total workers also being highest. Non-farm employment opportunities in the more distant hamlets were limited. Thus, the relative proportion of agricultural workers was higher in Lower Gairi Gaon and Bimbong.

Obviously, the relative availability of cropland in the study villages and their relative remoteness were crucial determinants of the extent to which their workers could depend principally on agricultural work for livelihoods. In Sundung, with distance and limited cropland availability, the working population was pushed towards non-agricultural work, since literacy and mean education level of household heads was also relatively high. This was replicated in Khawas Gaon. However, in Lower Gairi Gaon which was located at greater distance and had relatively low per capita cropland, more workers engaged in farm work because of limited non-agricultural opportunities and lower overall literacy. Upper Gairi Gaon had

overcome constraints like greater distance and land scarcity by furthering literacy. Therefore, the proportion of agricultural workers to total workers was relatively low in this village.

The opportunity of absorbing main workers in agricultural labour was limited in the villages because of the prevalence of *parma* exchange labour system, indicating that labour markets were imperfect. Hence, existing agricultural labourers were generally in the marginal category. The work-absorption capacity for agricultural labourers in the villages depended on relative cropland availability, irrigation access and overall crop cultivation performance. The proportion of agricultural labourers to total workers was lowest in better irrigated Poshyore, where each cropland ha generated the highest crop output value of Rs 66,260. Presence of agricultural workers was lowest in Lamini Gaon located at closer distance with lower irrigation access. Here each cropland ha generated the low crop output value of Rs 24,245, with lowest crop output value of Rs 2239 per capita. Nevertheless, there was already substantial pressure on cropland in the study hamlets, since each ha of farmland in these hamlets already engaged 3-6 workers on the average with limited opportunities for non-farm work.

Household industry workers in the study villages were mostly traditional artisans like carpenters, masons, and so on. The proportion of household industrial workers to total workers was generally low through the study region. The proportion of such workers was more marked in Khawas Gaon, where a substantial number of workers were engaged in the artisanal preparation and sale of *chiura* (flattened rice), but was very low both in remote villages like Lower Gairi Gaon and nearer villages like Chisopani. The proportion of non-farm workers engaged in other work was generally moderate, with wide variation between hamlets. This was relatively lower in most hamlets located farther away from the market centres like Bimbong, and higher for Mahakaldara and Chisopani which were located closer to the market centres. In villages where literacy levels were above 85 per cent, the proportion of other workers to total workers was high at above 34 per cent, In villages with lower literacy, the proportion of other workers was lower. Hence, literacy played a role in the absorption of workers into other works for livelihoods. Agricultural development in terms of per capita and per ha crop value was low in tribal Sundung located at moderate distance, where the proportion of non-agricultural to total workers was also highest. In agriculturally developed villages where per capita and per ha crop values were highest, e.g. Poshyore, the proportion of non-agricultural to total workers was low. Livelihoods were more diversified where agriculture was less developed.

3.4 Conclusion

Rapid population growth in the district and most blocks has put substantial pressure on basic infrastructure and land-resources, leading ultimately to severe crises in rural livelihoods and environments, particularly in the hill blocks. These crises are manifested over multiple dimensions, like critical land-man ratios, degraded forest cover, dwindling per capita cropland, limited cultivable waste land, high preponderance of small holdings below 1 ha in size, as well as relatively high WPRs and economic distress resulting from insecure work opportunities in agriculture, and consequent out-migration of male workers. However, such characteristics take on distinct social and regional patterns.

Topographic constraints in the hill blocks, pre-committed land-use and limited extent of culturable wasteland, limit regional agricultural development either along extensive or intensive margins. Nevertheless, a substantial number of the rural people in the hills still depend on agriculture for livelihood. More than fourth-fifths of the secure non-agricultural work opportunities generated in the district between 1991-2001 were confined to the plains blocks, and only a tenth of these were created in the hill agricultural blocks. Hence, currently the rural economy of the Darjeeling Himalaya has been trapped by unsustainability and livelihood insecurity.

Hamlet level analysis revealed that the crisis spreads across distinct social and geological locations in the study region. Land scarcity was greater in SC/ST dominated villages, in villages at higher elevations, and also in most hamlets at close distance from markets. The degree of unsustainability and the agricultural livelihood crisis were greater in the more remote and less irrigated villages, as well as those with lower level of human resource development. Despite limited non-agricultural job opportunities in such villages, their workers could not be pushed into the non-farm sector because of lower quality of human resources.

Nevertheless, the physiographic and agroclimatic diversity across the region did provide specific opportunities to farm households in terms of the differentiation in production niches. If such niches can be properly harnessed through agricultural diversification conforming to the sustainability of local resource utilisation, agricultural and economic sustainability may be restored as along with qualitative improvement in the standards of living of the people, as discussed in subsequent chapters.