

**THE PATTERN OF DEMOGRAPHIC CHANGES IN  
DARJEELING HILL AREAS: IMPLICATIONS FOR  
FUTURE GENERATIONS**

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# **CHAPTER I**

## **Introduction**

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- **The Problem**
  
- **The Profile of the Study Area**
  
- **Objective of the Study**
  
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# CHAPTER I

## Introduction

### 1.1 Prologue

Almost 200 years ago, the Reverend Thomas Robert Malthus put forward a theory of the relationship between population growth and economic development that still survives today. In his *Essay on the Principle of Population* Malthus postulated a universal tendency for the population of a country, unless checked by dwindling food supplies, to grow at a geometric rate, doubling every 30 to 40 years. The main reasons behind population growth have been fertility (birth), mortality (death) and migration.

Throughout most of the two million years of human existence on earth, humanity's numbers have been few. When people first started to cultivate food through agriculture some 12000 years ago, the estimated world population was no more than 5 million. At the beginning of the Christian era nearly 2000 years ago, world population had grown to nearly 250 million. From A.D. 1 to the beginning of the industrial revolution around 1750 it increased twofold to 728 million people. During the next 200 years (1750-1950), an additional 1.7 billion people were added to the earth's numbers. But in the next 35 years (1950 –1985) world population has almost doubled again, bringing the total figure at the beginning of 1985 to almost 4.9 billion. Turning from absolute numbers to percentage growth rates, for almost the whole of humankind's existence on earth until approximately 300 years ago, the human population grew at an annual rate not much greater than zero (i.e., 0.002% or 20 per million). Naturally this overall rate has not been steady; there were many ups and downs in the earth's numbers as a result of natural catastrophes and variations in growth rates among regions. By 1750, the population growth rate had accelerated by 150 times from 0.002 to 0.3 percent per year. By the 1950s, the rate had again accelerated, this time by threefold to about 1 percent per year. After that, less than three decades later, the world's population growth rate had almost doubled to a rate of 1.7 percent per year. Before 1650 it took nearly 35000 years, or about 1400 generations, for the world population to double. Whereas it took almost 1750 years to add 480 million people to the world's population between A.D. 1 and onset of the

industrial revolution, at current growth rates this same number of people is being added to the earth's population every 6 years.

The UN estimates that the world population reached 5.3 billion in 1990, and is increasing annually by more than 90 million persons. The rate of increase, 1.7 percent per year, has fallen below the peak rate of 2 percent per year attained by 1970. Growth was not steady but was marked by oscillations dictated by climate, food supply, disease, and war. Starting in the 17th century, great advances in scientific knowledge, agriculture, industry, medicine, and social organization made possible substantial increases in population. Inanimate energy gradually replaced human and animal labour. People slowly acquired the knowledge and means to control disease. All continents shared in a fivefold population increase over a 300-year period from about 500 million in 1650 to 2.5 billion in 1950 but increases were most striking in regions where new technologies were devised and applied.

Beginning about 1950, a new phase of population growth was ushered in when famine and disease could be controlled even in areas that had not yet attained a high degree of literacy or a technologically developed industrial society. This happened as a result of the modest cost of importing the vaccines, antibiotics, insecticides, and high-yielding varieties of seeds produced since the 1950s. With improvements in water supplies, sewage-disposal facilities, and transportation networks, agricultural yields increased, and deaths from infectious and parasitic diseases greatly declined. Life expectancy at birth in most developing countries increased from about 35-40 years in 1950 to 61 years by 1990. The rapid decline in deaths among people who maintained generally high fertility rates led to annual population growth that exceeded 3.1 percent in many developing nations, a rate that doubled population size in 23 years.

As of 1990, 1.2 billion people lived in the developed nations of the world, and 4.1 billion people lived in the less-developed countries. By region, over half the world's population is in East and South Asia. Europe and the countries of the former USSR contain 15 percent, North and South America make up 14 percent, and Africa has 12 percent of world population. Nine out of every ten persons who are now being added to the world's population are living in the less-developed countries.

As a country develops from primarily an agricultural to an industrial economy, large-scale migration of rural residents to towns and cities takes place. During this process, the growth rate of urban areas is typically double the pace of overall population increase. Some 29 percent of the world population was living in urban areas in 1950; this figure was 43 percent in 1990, and was about 50 percent in the year 2000. Urbanization eventually leads to a severe decline in the number of people living in the countryside, with negative population growth rates in rural areas. Rapid growth of overall population has deferred this event in most less developed countries, but it is projected to occur in the early decades of the 21st century. Most migrants to the cities can be assumed to have bettered themselves in comparison to their former standard of living, despite the serious problems of overcrowding, substandard housing and inadequate municipal services that characterize life for many arrivals to urban centres. Dealing with these conditions, especially in very large cities, presents massive difficulties for the governments of less-developed countries.

## **1.2 The Problem**

As of 2001 census, India has a population of over 1027 million, which is about 16.7 percent of the World total of almost 4.8 billion. With only 2.4 percent of the total World area, population density in India is almost 324 persons per square kilometre varying significantly among states. Uttar Pradesh is the most populated state in India estimated more than Pakistan's population. West Bengal is the most densely populated state and Arunachal Pradesh is the least densely populated state in the country. In relation to economic resources India is at a far greater disadvantage. In terms of per capita income India is among the poorest.

During the 40 years of the present century India's population has grown almost steadily, resulting in an increase of 255 percent over the 1901 census total. In absolute terms India's population had increased over 162 million in the decade 1981-1991, an increase which is about 39 million more than the addition to the country's total population over the first half of the century. If 1921 is taken as the cut-off point signalling the onset of demographic transition in India India's population since then grew 172 percent in 1981 and by 337 percent in 1991. This rate seems particularly high when matched against population growth rates of developed nations experienced

during periods of comparable social and economic change. However, when compared with experiences of many of the developing countries, India's population growth rate does not seem to be too high.

While the rate of population growth in India seems to have started a declination, the experiences of the different regions do not conform to this pattern. There have been considerable variations in the experience of the different states. Although migratory movements could partly explain the variations among the states, the rate of natural growth is also likely to exhibit considerable variation.

The level and pace of urbanization have been quite low in India throughout the century. Even during 1951-61, the rate of urban growth had been only 3.1 percent per annum in spite of the fact that this decade marked a fairly rapid acceleration in the pace of industrialization. . The rate of urbanization increased to 3.3 percent during 1961-71 and to 3.8 percent in the following decade. The state exhibited a wide range of urban growth pattern during 1971-81, with such dissimilar decadal rates as 225 percent for the small states of Mizoram and 28 percent for Tamil Nadu as against a national rate of 46 percent. The rates of growth of urban population have been consistently higher than those of rural population as expected. This is due primarily to the net in-migration to urban from rural areas and to the growth of new towns. Rural population still constitutes about 76 percent of the country's total population, and thus any differential in natural growth rate would be weighted in favour of the rural population.

The annual population growth rate from 1990 to 2003 was 1.8 percent. Annual number of births in 2003 was about 2,50,52,000. Life expectancy at birth (years) in 2003 was 64. The total fertility rate in 2003 was 3.0. The average annual rate of reduction of total fertility rate from 1990 to 2003 was 2.4 percent. Total adult literacy rate in 2000 was 57 percent. The percentage of population urbanized in 2003 was 28. The average annual growth rate of urban population from 1990 to 2003 was 2.6 percent. The life expectancy of females as percentage of males in 2003 was 102. The adult literacy rate of females as percentage of males in 2000 was 66. 25 percent of the country's poor live in urban areas and 31 percent of the urban population is poor in

this country. In 1991, 39 million people migrated in rural urban patterns of which 54 percent were female.

According to the Census of India, 2001, the population in West Bengal is 80176197 and the male and female numbers are 41465985 and 38710212 respectively. The density of population per sq. km. is 904. Sex ratio of West Bengal is 934 females per 1000 males. The literacy rate of the state is 69.22 percent. The male and female literacy rates are 77.58 percent and 60.22 percent respectively.

The rate of growth of population in Darjeeling hill areas is higher than the rate of growth of population of India. In 1835 the original village of Darjeeling had scarcely 100 inhabitants. From this the population had grown in 1849 to 10000. The decennial growth rate (in percent) from 1981 to 1991 for Darjeeling has been 26.91 percent whereas there has been a decrease in the decennial growth rate from 1991 to 2001 the figure standing at 23.54 percent. The decennial growth rate of female has been slightly higher 18.93 percent and males 16.83 from 1991 to 2001. There has been an increase in density i.e. Population per sq. km also, 413 for the year 1991 and 510 for 2001. In 1951, sex ratio was 84:100; it has increased to 91 females per 100 males in 1991.

The rapid extension of agriculture in the early days of development resulted in the clearance of large areas of forest at favourable altitudes. The diminishing man-land ratio not only resulted in proportionate decrease in crop productivity, which is always lower in the hills than in the plains but also brought in various other environmental hazards. This rendered reservation of the remaining forests necessary for the conservation of timber and water supply and for protection against erosion. The effect was to eliminate the jhum method of cultivation, to ensure supplies of water, timber and firewood and to develop certain minor industries such as woodcutting, charcoal burning and timber sawing.

The interdependence of the hills and plain areas need to be properly recognized as lopsided careless development can create irreversible damage. Once a hill, a ridge or waterfront is destroyed, it can never be regained. The damage is permanent, and irreversible.

In the context of the hill region and towns, however, where semi-skilled and unskilled labour is generally abundant and can be gainfully employed in tourism industry, employment generation as a positive economic impact, becomes a decisive factor in impact evaluation as has been seen even in developed countries. The influx of rural migrants in response to the increasing demand for labour in various new and developing industries in many centres has led to a phenomenal growth of population in them. This rapid increase has aggravated the housing problem.

In addition to the above problem, with the increase in the population the human settlements are going to be more and more congested. Besides, the construction of house-type also has been changed.

Although tourism has to be viewed as a vehicle of economic growth in the hill regions, care has to be taken to curb the impacts of negative factors. 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. Expansion of construction activities along the steeper slopes has exceeded the carrying capacity of the land. Hence, the frequent and intensity of landslides has increased. The second area of environmental stress results from the generation of increased waste residuals.

The present study will make an attempt to identify the major causes of population growth in Darjeeling district of West Bengal and its relations with the economy. It also attempts to capture the various dimensions of the livelihood patterns of the people in the Darjeeling district of West Bengal.

And in addition, few studies have attempted to capture the environmental problem due to over population in the hill areas of India, especially in Darjeeling district of West Bengal. The proposed work is an attempt to make an in-depth analytical study in this direction for the chosen area.

### 1.3 The Profile of the Study Area

The chosen study area is the Hill Areas of Darjeeling District (Darjeeling, Kurseong and Kalimpong sub-divisions), which is situated in the Jalpaiguri division of West Bengal.

For administrative and revenue purposes, the district has four sub divisions – Darjeeling, Kurseong, Kalimpong and Siliguri. The district head quarter is situated at Darjeeling town. For administrative purposes the hill region of the district is divided into nine thanas or police station areas. Darjeeling Sadar subdivision consists of the thanas of Darjeeling, Pulbazar, Sukhiapokhri, Jore-Bungalow and Rangli Rangliot, Kalimpong subdivision of Kalimpong and Gorubathan and Kurseong subdivision of Kurseong and Mirik.

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. Darjeeling has been containing 20.76 percent of the population, Kalimpong 14.64 percent and Kurseong 11.28 percent.

Darjeeling Sadar subdivision covers an area of 935.5 sq. km. (361.2 sq. miles). It occupies roughly 28.7 percent of the district area. It is the most populous of the three hill subdivisions of the district because of its good communication network, accessibility from the plains and availability of agricultural land. Darjeeling town as the most attractive tourist resort of the state has excellent job opportunities.

Territorially, Kalimpong is the largest subdivision, comprising 1056.5 sq. km. (407.9 sq. miles). This subdivision covers 32.4 percent of the district area.

Both in area and in population, Kurseong is the smallest subdivision with an area of 425.3 sq. km. (164.2 sq. miles). Thus the subdivision covers 13 percent of the district area.

The total population of Darjeeling district according to Census of India 2001 is 1605900. The male population is 826334 and female is 779566. Density of population per sq. km. is 510.

According to 1991 Census, 69.53 percent of the total population is rural and 30.47 percent is Urban. The percentage of male population is 52.6 percent and the percentage of female population is 47.7 percent.

Sex ratio of Darjeeling is 937 females per 1000 males.

Literacy rate of the district is 71.79 percent. The male and female literacy rates are 80.05 percent and 62.94 percent respectively. For the entire Hill Region i.e., the study area apart from the private schools, there are 705 Primary Schools, 45 Middle Schools, 30 Higher Secondary Schools and 12 Colleges, aided by the Government.

The economy in Darjeeling chiefly depends upon Tourism, the Tea industry and Timber. Residents who own hotels and restaurants provide employment for local people, while others earn a living by selling local handicrafts, souvenirs, and driving tourists around. Tourism is an important economic activity in the mountain area generating incomes and employment for the local population. The tourists every year spend to the tune of Rs. 70 crore.

Apart from tourism the biggest industrial activity and that offering the largest employment in the hills is tea. Today there are 87 registered tea gardens producing tea and the area on which this produced is 17500 hectares. Among them 11 are organic tea gardens and 2 are sick tea gardens. The total production ranges from 10 to 11 million kg annually. The industry provides employment directly and indirectly to about 50 percent of the population. 60 percent of the directly employed are women. The employment is on a family basis. In most of the gardens it is the third or fourth generation of workers who are employed. 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.

In the three hill subdivisions of Darjeeling district there are 8 government hospitals. Apart from that there are several health centres and private nursing homes.

#### **1.4 Objective of the Study**

The present study is planned with the following objectives.

1. To study the demographic pattern before and after the advent of the British in Darjeeling and also during post independent period.
2. To study the key factors which are responsible for the growth of population in the region.
3. To analyse the livelihood pattern of the population.
4. To analyse the occupational shifts of the people, that is, the causes and effects of the occupational shifts.
5. To study the vital statistics of the population and to assess the medical facilities available to them.
6. To assess the adverse impact on environment due to the massive population growth in Darjeeling.
7. To provide suggestions for the betterment of environment and economic development in the region for the future generations.

#### **1.5 Significance and Expected Contribution**

The Darjeeling district offers the most remarkable example of growth of population stemming significantly from immigration from outside. Urbanization through the establishment of a sanatorium at the nucleus town also led to growth of employment opportunities and hence to population increase. But the most potent factor contributing to the growth of population had been the tea industry. Growth of population in the district ultimately causes increase in the number of residential households. This has obviously resulted in the deterioration of open space in the district. Due to population growth along with massive destruction of forest in the successive decades the forest in Darjeeling are rapidly decaying. The ill effect of deforestation has adversely affected the environment, which in turn has resulted in soil erosion, floods and famines, changes in weather, jeopardizing agricultural productions etc. Population pressure affects the quality of air including water and soil adversely.

The main purpose of the proposed study would be to identify the root causes behind the population growth and its effects on the economy and environment as well

as on the human life. Identification of such things would help in finding out implications for future generations and also help in suggesting measures for policy-making authorities.

## **1.6 Research Hypotheses**

In this research investigation we would like to test the following hypotheses.

Hypothesis I: There is a positive correlation between population growth and migration in hill region.

Hypothesis II: There is a negative correlation between population growth and impact on environment.

Hypothesis III: Increase in population growth causes rapid urbanization.

Hypothesis IV: Female labour force participation is higher not only in the tea industry but also in any field of unorganised sector of work.

Hypothesis V: Introduction of tourism in the hill regions causes more involvement of the labour force in the tourism industry and less interest of working in agriculture and allied activities.

Hypothesis VI: The mortality rate decreases, as the medical facilities are positively available to the people now a day.

Apart from the above set of hypotheses, we have every freedom of inclusion and exclusion of any hypothesis.

## **1.7 Sample, Data Sources and Methodology**

The samples include three hill subdivisions of Darjeeling district, viz., Darjeeling, Kalimpong and Kurseong.

The study is based principally on secondary data to explain the pattern of demographic changes in Darjeeling hill areas. Some important data sources are District Census Handbooks of Darjeeling district, District Statistical Handbooks of Darjeeling district, Reports of the General Committee of the Indian Tea Association, Tea Statistics given by Tea Board of India, etc.

For effective comparison and valid conclusions the statistical unit of observation is the 'number' of persons in the economy, which depends on fertility, mortality and migration varying from year to year.

Along with the tabular presentation, numerous charts and diagrams will also be prepared. The tools used for analysing data would range from simple mathematical and statistical applications and tests to economic analysis depending on the analysis to be conducted.

After collecting data we will estimate the parameters of the mathematical functions. Mathematical analysis will set a model of mathematical equations from the tabulated data. Assuming that the fitted model will be a reasonably good approximation of reality we have to develop suitable criteria to find out whether the estimates obtained in are in accordance with the expectations of the theory that is being tested.

Statistical analysis will include determination of various statistical measures like correlation and regression, time series, index numbers, vital statistics, etc. Correlation will concern with the measurement of the strength of association between variables, while regression will concern with the prediction of the most likely value of one variable when the value of the other variable is known. In time series a series of observations will record in accordance with the time of occurrence. The index numbers will be an average computed from the data given in heterogeneous units. Vital statistics will be concerned with the measurement of some rates of mortality, fertility and overall growth of population.

If the chosen model confirms the hypotheses under consideration we may use it to predict the future values as well. And this estimated model might be used for different types control measures or policy purposes also.

## **1.8 Limitations of the Study**

The present study is limited to only three hill sub-divisions of Darjeeling District- Darjeeling, Kurseong and Kalimpong and not another subdivision, Siliguri.

Again, this study will not consider the ethnicity of the people of Darjeeling and the distribution of the people on the basis of ethnicity, in details. Hence, the study will be able to represent only a partial picture of the pattern of demographic changes in Darjeeling.

Further the lack of data on the demographic pattern before the advent of the British in Darjeeling is another limitation for the present study.

However, modest attempt will be made to understand the subject from different angles and to minimize such limitations.

## **1.9 Review of Literature**

Studies conducted and literature available related to the chosen area of research work enables the researcher to identify the issues that may be considered relevant or closely akin to the subject or region under study. The following section is an endeavour to focus on the already published works relating to this study.

### **Migration And Population Growth**

According to Datta (2003) apart from birth and death rates the migration is also very important in the district of Darjeeling. Saha (2000) says that most of the rural people like to migrate to urban areas for jobs and other purposes.

Mittal and Sharma (2002) argue that in India, the urban population increased from about 10 percent in 1911 to 24 percent in 1981. Net rural-urban migration accounted for about one-fifth of total urban growth during 1961-71 and 1971-81. Most of the women's migration is short distance migration and also seasonal in character in India. Kapila (2000) pointed out that there is some indication that net rural-urban migration has increased in absolute magnitude, but its contribution to

urban growth during 1961-71, 1971-81 and 1981-91 was only 21, 20 and 29 percent, respectively.

In Darjeeling Campbell gave much encouragement to immigrant cultivators and populations rose from about 100 in 1839 to about 10000 in 1849 (Das, 1978). Fareedi and Pasang found that the percentage of rural population in Darjeeling has gradually declined across the years. This would be mainly because of migration from rural to urban areas for employment. Sarkar has analysed that the result of unexampled immigration of the people of Nepal can be realized by the census data of 1891 in which it was found that no less than 88000 persons was born in Nepal. The rapid increase of population in the hills has made Darjeeling a real city from quantitative point of view. Many Tibetans and Chinese people have arrived in Darjeeling for trade purposes. Many more plainsmen have started settling in the urban areas. Das (1978) states the steady improvement in communications due to the building of Railway and roads also facilitated the immigration of population. Chattopadhyaya (1987) says that immigrants from Nepal annually augmented the population of Kalimpong and the adjoining localities east of the Teesta River. Migration from Nepal to take up land for cultivation in Kalimpong continued in 1879-80, and in 1875-76.

Sharma (1994) noticed that by 1850, the entire hill areas of Darjeeling located west of the river Teesta had witnessed a favourable zone for cultivating the Cinchona plants. The areas were developing at a very fast pace especially due to the colonial policy of British Government and her encouragements for the Nepali migration from Nepal and Sikkim as the plantation workers in Mungpoo. The introduction of Cinchona plantation at Mungpoo mainly attracted a few people of eastern Nepal and Sikkim and they migrated to the plantation in search of jobs. Rest of the working population was enticed from the local people. In Rongo Medicinal Plantation, the workers were mostly consisting of the immigrants from Burma.

Peterson (1975) argued that individual migrants become permanent residents of the new country does not mean that one can merely add them up to derive the demographic effect of the migration. If 1000 persons migrate from Country A to Country B, the population of Country A is decreased by 1000 and that of Country B is

increased by the same number. According to him in all probability the shift will bring about changes in the population structure, economy and social conditions of both the countries, and these changes in turn will influence the population growth of each of the countries. He has shown that the relation between migration and population growth can be analysed with three components: firstly, the direct movement of the migrants themselves, secondly, the effect of the movement on the population structure of the two areas, which ordinarily increases the size of the transfer, and thirdly, the effect on social-economic conditions in the two areas, which may reduce or cancel the results of the transfer.

Rao (1986) has accepted that historically both internal and overseas migration have been associated with widespread military conquests, agricultural colonization and plantations, expeditions of merchant traders, and religious missionaries, slave trade and indentured labour. He has argued that studies in migration stemmed from two theoretical sources: culture contact theories and the Marxian analysis of colonization and alienation. While the former approach is dated, the latter is still significant in studying the process of migration and its consequences in the context of the capitalist mode of production development and underdevelopment.

### **Tea Industry And Population Growth**

A number of books have been published on tea plantation in Darjeeling. Ghosh (1987) revealed that in 1874 there were 129 Europeans employed as managers or assistant managers of tea gardens in Darjeeling and under them there were 1373 natives in posts of trust or authority. The total number of such workers employed in all the gardens was 19424, while the returns of 1873 showed only 14019. Evidently a decrease in the number of Europeans working in the tea gardens, it can be presumed at the same time that the number of the Indians or Nepalese increased. The main causes of the rapid increase of the population have been development of the tea industry and the influx of settlers to cultivate the wastelands of the district. The tea plantation workers are mainly the immigrants or the descendents of migrants from various parts of the country and even from the neighbouring countries. The indigenous people of Assam, Bengal and South India did not accept the works in the plantations due to low wage and isolation from the mainstream of national life. The

history of their migration is normally dates back to early eighteenth century. The tea garden workers in Assam and Dooars are mainly the tribes from Bihar, Orissa and Madhya Pradesh while the entire work force of Darjeeling hills are exclusively of Nepalese origin (Sharma, 1999).

Sarkar recognized that by the middle of the nineteenth century tea industry had become the major economic activity in Darjeeling. The tea industry had a predominating influence upon the growth and development of the hill city. The Darjeeling Himalayan Railway that was opened up in 1881 was practically aimed at carrying the tea to the plains. The rapid growth of tea industry in Darjeeling hills has obviously resulted in the huge demand of labour force and the local inhabitants were found to be insufficient to solve this rising demand of labour.

According to Chattopadhyaya (1987) a noticeable feature of the migration of labourers of the Burdwan Division in the nineteenth century was that the labourers while wandering about in a district looking for some employment were picked up and registered by contractors who used to despatch the major portion of such registered labourers to the tea districts of Assam, Cachar, Darjeeling and Jalpaiguri, a smaller number being sent to Chittagong as well. There was a 'constant' influx of labourers from Nepal for employment in the tea gardens of Darjeeling.

### **Tourism and Employment**

Kaul (1985) showed that when tourists pay for goods and services in other countries, these amounts are reflected as national travel receipts for such countries. The contribution made to the economy of a country by tourism would depend upon these receipts, and would establish the importance that tourism has for that country. Receipts from international and regional tourism are in foreign currency and accrue to a country as "foreign exchange". He also stated that tourism is a manpower intensive activity and increasingly provides direct and indirect employment both in the skilled and the unskilled categories.

Singh (1996) observed that throughout the world tourism has emerged as a major sociological and economical factor. The turnover figures are indeed tremendous. It will not be an exaggeration to say that tourism has now become the

largest industry in the world. According to him tourism is not only an economic activity of importance to national development, but also an important medium of cultural exchanges among nations of the world. Kamra (2001) said that there is hardly any other economic activity, which is capable of generating as much added value, employment and hard currency (foreign exchange) and that also at such a low cost as tourism.

### **Female Workforce Participation**

In both South-east Asia and in Latin American cities, plenty of opportunities are available to women in the service and industrial sectors (Engracia and Merrin (1984), Fernandez-Kelly (1983); Meyer (1982), Khoo (1984)). It has been established that women are no longer passive movers who follow the household head (Fawett et.al (1984), Rao (1982)). Malik and Giri (1986) opined that female labourers are paid in commensuration with their work efficiency. In India, various studies have been conducted on female workforce participation from diverse angles. Women in rural India as well as in rural West Bengal are involved in many activities both in farm sector and off farm sector. Arun (1999) found on the basis of fieldwork in two panchayats of Kerala in 1996 that woman's responsibilities over farming as well as their general work burden was heightened in households where men migrate to Gulf. Almost 48 percent of women in Arun's sample, were managing the family farm as their husbands had paid employment and were migrants or were absent for other reasons. About 35 percent of women were involved in paid work and 7 percent were employed in the formal sector but also undertook some farm supervision. Visaria (1976) observed that the never-married female work participation rate was more than currently married females but less frequent than widows and divorced females in urban Maharashtra. On the other hand, in rural Maharashtra, the never-married females have lower labour force participation rates than both currently married females as well as widowed and divorced females. Based on 1961 census, Mitra et. al. (1979) found that 12.1 million females were engaged in household and non-household industries other than cultivation.

Some studies examined the contribution of female labour force participation in terms of income. For example, Tuteja (2000) and Rana (2004) analysed that females



workers in Haryana contributed significant portion of their income. Mencher (1986) and Saradamoni (1982) in their study relating to six villages (two each in Kerala, Tamil Nadu and West Bengal) found that in households with no land, where both women and men were earners, the average of women's contribution to household earnings was more than the men's in five villages and equal to the men's in the sixth. Among marginal landowning households too, female earnings from outside work ranged from a little under half to well over half of the total household earnings from outside employment.

Regarding studies on the pattern of time allocation by women and men, Jain and Chand (1982) observed that rural women work larger hours than men in Rajasthan and West Bengal. Another study of Batliwala (1985) based in Karnataka examined that women put in the same number of hours but expend more total energy in the tasks they do. Some studies that have examined women's work alone find that a 14-16 hour working day is common in certain area even among pregnant women (Khan, 1983 for Uttar Pradesh).

Unni (1999) and Visaria (1999) observed that the recent trends in women's employment participation both in the NSS and census data shows a marginal increase, compared to previous decades, while the important feature of this trend is the increasing casualisation and informalisation of women's work. Unni's Study (2001) on labour market in South Asia further examined that there was less gender difference in the proportion of regular workers as compared to casual workers. The proportion of regular women workers doubled during 1977-78 to 1993-94, while there was not much of an increase in male regular workers. Standing (1998) argued that the growing flexibility in the labour market or increasing informalisation, had led to feminisation of the labour force. Sundaram (2001) also observed that in the 1990s (between 1993-94 and 1999-2000) the number of days worked by usual status women workers increased from 241 to 246 days in the year in all activities – agricultural and non agricultural.

As regards the wages, there are evidences to show that the increase in real wages of the 1980s was not sustained in the 1990s either in agriculture or non-agricultural sectors for both men and women (Unni, 1999). While analysing the nature

and trends of employment under the changing policy regime, studies have also suggested a higher labour absorption by the unorganised segment of the economy (Papola, 1994 and Despande and Despande, 1998).

### **Population Growth And Environment**

Saha and Chakravarty (2000) highlight that at least 30 percent of the terrestrial area on this planet should remain covered with forest to maintain a healthy environment. According to an estimate in 1987 forest has been reduced to less than 10 percent of the area, which it occupied 50 years ago in Madagascar, Western Ecuador and Brazil. In India there is only 12 percent of land covered with forest.

Datta says that wanton destruction of forest along with intensive grazing, irregular and faulty agricultural practices, construction of roads along with explosion of dynamite in hill areas without adopting adequate protective measures and also other biotic factors are the main contributing factors in aggravating the problem of soil erosion and landslides in the area. Besides these the high rainfall in the mountainous region and the foothills may also be the contributing factors in this regard. With the rapid growth of population the people are depending more and more on land and consequently land is fragmented and the forests have been encroached upon. It has been estimated that a large number of villages in the rural hill areas are prone to constant landslides particularly during rainy seasons.

Saha and Chakravarty (2000) established that air pollution has been aggravated by four particular developments. That typically occurs as countries become industrialized; growing cities, increasing vehicular traffic, rapid economic growth and industrialization and higher levels of energy consumption. Incomplete combustion of fuel in motor vehicle produced carbon monoxide, which is a poison for respiration.

Saha (2000) showed that piping, soil creep, slumping and pinnacle are most important means of soil erosion in the hilly terrain of Darjeeling Himalaya. The results of high population growth are soil erosion, landslides, desertification and deforestation. Deforestation due to over exploitation of forests results in global warming and loss of bio-diversity. Losses of life, property, displacement of people are

some of the effects of soil erosion and landslides. Fareedi and Pasang investigate that Darjeeling has witnessed a sudden growth in the number of taxis and vehicles, which is now posing a major threat to the health and environment of the people in terms of vehicular pollution.

Jhingan, Bhatt and Desai (2003) argues that rising population is a major source of environmental degradation in India. Population affects the environment through the use of natural resources and production of wastes. These lead to loss of bio-diversity, air and water pollution and increased pressure on land. Excessive deforestation and overgrazing by the growing population has led to land degradation. A major cause of the loss of bio-diversity has been the depletion of vegetation in order to expand agriculture by the rapidly rising population.

### **Urbanization**

The 43 percent of the World's people is currently living in urban areas occupying only 5 percent of the earth. Major cities face a number of resource and environmental problems. Most of the cities have relatively few trees shrubs or natural vegetations that absorb air pollutants, give off oxygen, and help cooling the air. The process of urbanization, a man induced phenomenon results in the transformation of mostly natural landscape of the richly vegetated countrysides into the development of cities. Towns are characterized by concrete structure, which greatly modify the pre-existing climatic conditions of the countryside of pre-urbanized stage. Unplanned urbanization and environmental degradation are most vital problems for high pressure of population growth and rapid urbanization. The various factors of well-developed city of large size viz. density of buildings, height of the buildings, size of the city, size of population, length and breadth of roads etc. modify the climatic condition of the city. It had been estimated that in 2001, the percentage of urban population to the total in the whole world, developed and developing countries would be 51.3, 78.8 and 43.5 respectively (Saha and Chakravarty, 2000). In China, for example, the proportion of urban population was reported to have increased from nearly 22 percent at a time of the 1982 Census to about 53 percent by mid 1989; but the 1990 Census has reportedly classified only 26 percent of the population as urban. In Sri Lanka and Thailand, in mid 1989, only 21 to 22 percent of the population was residents of urban areas.

According to Kapila (2000) the total urban population in India in 1991 (including Jammu and Kashmir where the census was not conducted) was about 218 million. In India the percentage of urban population to the total in 1951 was 17.3, while in 1991 it was increased to 25.7 percent (Saha and Chakravarty, 2000).

Jhingan, Bhatt and Desai (2003) observe that with rapidly growing population, it becomes difficult to manage the adjustments that accompany economic and social change. Urbanization in Under Developed Countries creates such problems as housing, power, water, transport, etc. Besides growing population threatens permanent environmental damage through urbanization in some rural areas.

### **Educational Facilities**

Bagchi (1998) analyses the situation and argues that British came to India with radically different cultural tradition the commercial aims, which was at the same time scientific and effective. To attain the end English education was required and it was introduced by the East India Company. She says, "From 1813 the Company set aside some money for education and after the charter act of 1833 English became the official language. In 1844 Lord Hardinge announced that English Educated Indians would be given preference for Governments appointments. Free traders voiced their support for this policy believing it would help to develop an Indian population loyal to the British. The Missionaries joined the chorus of Approval. Eager to convert Indians from influential families, Missionaries recognized how much easier it would be with English as the language of professional advancement." Again she investigates that gradually, Missionary activities have started in Darjeeling from 1895. Their main aim was to convert people to Christianity, and also to impart education to European and Anglo-Indian communities as the place was found suitable for them because of scenic beauty and cool climate of this place. From 1940 up to 25 percent of Indian students were admitted to these European schools. However, they came from very cultured and wealthy families and they came to get the frail of western education not to embrace religion.

O'Malley (1907) observed that the missionaries were the pioneers of education among the native population. First Mr. Start opened up a school for the Lepchas. In 1873 a school for the Bhutias was also established. By the end of

nineteenth century several English schools, numbering at least 10, were opened up for educating the children of Europeans and Anglo Indians (Sarkar). In 1873 there were 25 Primary schools with 615 boys and girls receiving instructions. But in 1907 there were 70 schools of which 55 were both day and night schools with a roll of 2420 boys and 300 girls and an average attendance of 1880. In 1860-61 there was only one school receiving government aid, which had a total attendance of 16 pupils. In 1904-05 there were altogether 142 schools with 3950 pupils. The total expenditure on education in the same year amounted to Rs. 38216 only (O'Malley, 1907). According to the fifth All India Educational Survey of 1985, about 95 percent of the rural population had access to a primary school within 1 km and 85 percent had a middle school within 3 km (Kapila, 2000).

### **Female Education**

O'Malley (1907) found that in Darjeeling the proportion of literate females rose during the decade ending in 1901 from 5 to 14 per 1000 (approximately 1 in 71) – a ratio surpassed by no other district in Bengal outside Calcutta. The schools for girls are the Diocesan Girls' School (Church of England), the Loreto Convent (Roman Catholic), the Queen's Hill School (American Methodist), all situated at Darjeeling and the Dow Hill Girls' School, maintained by Government, situated at Kurseong. Both the Maharaja of Cooch Behar and Burdwan took special interest in the field of education. Maharani of Cooch Behar and Maharajadhiraj of Burdwan Bijay Chand Mahatap were the chief supporters of Maharani Girls' School (Sarkar).

The 1991 Census has shown a rapid increase in the literacy rate among women compared to that among men. In spite of this, rural female literacy rate (25 percent) is only half the male rate of 47 percent (Kapila, 2000).

### **1.10 Brief Overview of the Chapters**

Chapter II deals with the origin of the name of the district as well as the topography and physical settings of the hill areas of Darjeeling district. It also provides a brief history of Darjeeling. Growth of population, composition of population and distribution of population has been presented in Chapter III. This chapter makes an exhaustive study on the demographic pattern before and after the

advent of the British in Darjeeling and also after Independence. In this chapter a directional analysis has been done with the help of suitable econometric tools and techniques as per necessity. Chapter IV is about the key factors, which are responsible for the growth of population in the hill areas of the district. This chapter specifically deals with the consequences of the key factors in the economy of Darjeeling. In this context we have used necessary economic analysis to ascertain hypothesis mentioned. Chapter V examines different economic trends and miscellaneous occupations of the people in the Darjeeling district of west Bengal. It makes a comprehensive discussion of their different livelihood pattern. Level of prices has also been clearly depicted in this chapter. In a section the pattern of occupational shifts and its effect on the economy have been discussed. In Chapter VI we have described the different medical facilities, which are available to the people. In this chapter we have also analysed in detail the vital statistics of the population in the region. Chapter VII is related to the impact on environment due to the population growth. The huge rate of population growth is adversely affecting the environment in this region. The felling of trees for the expansion of urbanization as well as the construction of multi-storied buildings and the rising of the number of cars plying on the hills everyday, all lead very dangerously to a critical environmental decay in this region. As we know that Darjeeling is an earthquake prone area in the world so the large amount of deforestation and construction of high-rise buildings without any anti earthquake measure will obviously lead to an unsafe path for the future generations. Chapter VIII summarizes and concludes. It also provides suggestions for policy measures for the betterment of environment for the future generations.

## **CHAPTER II**

### **Darjeeling: Historical and Geographical Contours**

- **Origins of the Name of the District**
  
- **Physical Settings and Topography**
  - **Location and Boundaries**
  
  - **Geological Formation**
  
  - **Topography**
  
- **Brief History of Darjeeling**

## CHAPTER II

### Darjeeling: Historical and Geographical Contours

#### 2.1 Origins of the Name of the District

The name of the district 'Darjeeling' probably has Tibetan origin. This means where Indra's (the Hindu God) thunderbolt or sceptre rested (Dorje – the majestic thunderbolt, Ling – place, hence 'the place of the thunderbolt'). This was also the name of a Buddhist monastery once situated on the top of the Observatory Hill in Darjeeling (Mordecai and Agarwala, 1960).

A L Waddell, who visited Darjeeling in 1889 informs us that Darjeeling means the cave of the mystic thunderbolt on the Observatory Hill from which cave Dorje-ling or Darjeeling derives its name. Earl of Ronaldsay says, 'In the interests of historical accuracy I should, perhaps, add that I believe the commonly accepted explanation to be incorrect. A derivation, seldom heard, but which I have the best of grounds for believing to be correct, is that which attributes the word Dorje in the first half of Darjeeling to the name of a Lama, Dorje-rinzing, who founded the monastery which once stood on Observatory Hill. The shrine was subsequently removed to the Bhutia Basti, where it remains to this day; but the former site retained the name of the place of Dorje-Lama.' According to another view Darjeeling is the corruption of the Sanskrit word 'Durjaya-Linga' means 'Siva of invincible prowess, who rules the Himalayas'. Sankrityayan thinks that this view is not tenable. He also believes that Dorje-ling was the name of the monastery on the Observatory Hill and means 'vajra-dvipa' (Sen, 1989).

#### 2.2 Physical Settings and Topography

The physiographic divisions of the district are well marked with the tremendous variation in the range of altitude (Lama and Sarkar (ed.), 1986). The plains from which the hills take their rise are only 300 feet above sea level; the mountains ascend abruptly in spurs of from 6000 to 10000 feet in height (Hunter, 1974).

### **2.2.1 Location and Boundaries**

Darjeeling, the northernmost district and the smallest district of West Bengal is located between 26°31' and 27°13' North latitudes and 87°59' and 88°53' East longitudes (Dash, 1947). The principal town and administrative head quarters of the district is Darjeeling town at 27°3' North latitude and 88°16' East longitude (Ray, 1967).

Of all the frontier districts of India the boundary of Darjeeling is most complicated. There is Nepal to the west, Sikkim to the north, Bhutan and Jalpaiguri to the east and Purnea, North Dinajpur and Bangladesh to the south. The area of the district according to the Surveyor General of India is 1160 sq. miles but according to the Director of Land Records and Surveys, West Bengal, 1200 sq. miles (Mitra, 1954). The total area of the three hill subdivisions namely, Darjeeling, Kurseong and Kalimpong is 2157 sq. kms (Lama and Sarkar (ed.), 1986).

### **2.2.2 Geological Formation**

The Himalayas are part of the string of Eurasian mountain ranges from the Alps to the mountains of south - east Asia that were formed within the past 65 million years by global plate-tectonic forces that produced tremendous upheavals in the Earth's crust.

During the Paleozoic and Mesozoic eras (65 to 570 million years ago) the area that is now the Himalayas occupied the floor of the ancient Tethys Sea on the north part of the Indian Plate of the old super continent of Gondwanaland. One of Gondwanaland's fragments, the lithosphere plate that formed the Indian subcontinent, pursued a northward collision course with the Eurasian Plate. This Indian-Australian Plate gradually confined the Tethys trench within a giant pincer between itself and the Eurasian Plate. As the Tethys trench narrowed, increasing compressive forces triggered many tectonic swells, depressions, and interlacing faults in its marine sediments, and masses of granites and basalts intruded from the depth of the mantle into this weakened sedimentary crust. The mountains were formed as the Indian Plate, moving north, pressed against the stationary Eurasian landmass. The main uplift occurred during the middle or late Tertiary period (12 to 65 million years ago). The

ranges of the system developed from north to south in a series of stages. Only within the past 600,000 years, during the Pleistocene Epoch (1.6 million to 10,000 years ago), did the Himalayas become the highest mountains on Earth. Even today the system has not reached a state of equilibrium, and earthquakes are frequent. According to the Bureau of Indian Standards, the town Darjeeling falls under seismic zone-IV, (in a scale of I to V, in order of increasing proneness to earthquakes) near the convergent boundary of the Indian and the Eurasian tectonic plates.

The mountains are made of folded rocks. Resting over the Shiwalik beds is a group of still older rocks consisting of course, hard sand stone, sometimes solidified into quartzite of carbonaceous and splintery states of shale and of impersistent seams of powder coal. North of the Gondwanaland outcrops the hills are occupied by a group of low grade metamorphosed sediments represented by quartzite, slates, phyllites and foliated rocks composed of flaky minerals such as graphite etc. the Daling series rests under a variety of foliated and banded metamorphic rocks, partly sedimentary and partly igneous in origin. Those rocks are known generally as Darjeeling Gneiss (Lama and Sarkar (ed.), 1986). Darjeeling gneisses consist of garnetiferous gneisses, sillimanite biotite gneisses, pegmatite and aplites (Bose, 1968).

### **2.2.3 Topography**

Himalayas comprises a series of parallel and converging ranges. The vast Himalayan complex extends in an arc of about 2410 km (about 1500 mi) from the Indus river in North Pakistan eastward across Kashmir, North India, part of South Tibet and West Bengal and most of Nepal, Sikkim, and Bhutan. The system covers an area of about 594,400 sq km (about 229,500 sq mi). The Himalayas can be divided into four parallel, longitudinal mountain belts of varying widths. From south to north these belts are the Outer Himalayas or Sub-Himalayas; the Lesser Himalayas; the Great Himalayas; and the Tethys or Tibetan Himalayas. The Outer Himalayas comprise the Shiwalik range, which rises steeply from the North Indian plains and descends gently to flat-floored basins. Most of the Darjeeling district lies in the Shiwalik Hills (Lower Himalaya).

The district is shaped like an irregular triangle, but when the Siliguri subdivision is excluded the hill areas looks somewhat a quadrilateral (Lama and Sarkar (ed.), 1986). The southern region, the base, comprises the Terai, a marshy low-lying area at an average height of 300 ft above sea level; the apex is formed by the Phalut ridge, nearly 3600 metres high, where Nepal meets India. The Eastern frontier lies along the Rivers Teesta and Rangeet, beyond is Rishi-La and Bhutan. The lower regions of the labyrinthian hilly forest-clad ridges, have been cleared for the cultivation or the world famous Darjeeling Tea (Banerji, et. al., 1980).

The hill portion of the district is confused labyrinth of ridges, bold spurs, narrow deep valleys carved out by various agents of denudation like wind, water and snow. The main ridges wind and zigzag in all directions giving off a number of long spurs on either flank. For the most part the ridges stretch from north to south while the courses of the principal rivers are in the same direction but many of the spurs and of the torrents flowing between run east to west and even in some areas from south to north (Lama and Sarkar (ed.), 1986).

### **Mountain System**

In spite of the confused nature of the terrain pattern certain well-marked features can be observed. In the northwest the lofty Singalila ridge that culminates ultimately in the lofty height of Kanchenjunga (8585 m.) in Sikkim, enters the district forming the highest part of the district. The Phalut ridge goes gradually towards Sandakphu and descends south at Maneybhanjan. The ridge continues southward to the level of the plains near Mechi River. From Singalila, the Senchal-Mahaldiram spur juts out in the eastern direction and moves in a north-northwest to south-southeast alignment. This spur is in the central part of the district and acts as a mountain knot from which as many as seven spurs diverge in different directions separating one valley from the others, the more prominent on the east side being the Takdah-Peshok ridge descending to the junction of the Rangeet with the Teesta and the Sittong spur further south.

The eastern ranges are separated from their western counterparts by the Teesta gorge. East of the Teesta, the highest ground is at the Rishi La. From here one of the more prominent ridges runs south-east and cuts off the Jaldhaka Valley from the rest

of the district. Another ridge descends Labha. From here an important spur leads south–westward down to the plains and another north–west of Rissisum where it joins a ridge running north–east to south–west in Pedong and the south–western spur passes through Kalimpong and descends abruptly into the Teesta valley (Lama and Sarkar (ed.), 1986).

### **River System**

The rivers of this district are the chief water resource of the area though there are a large number of springs. The main rivers of the district are perennial and are characterized by high run-off being fed from the glaciers and monsoon rain.

The most dominating river Teesta forms the boundary of the district from the point where it is joined by the Rangpu down to its junction with the Great Rangeet flowing in from the west. It leaves the district at Sevok. In Darjeeling district, its principal tributaries are the Rangpu and the Rilli on its left bank and the Great Rangeet, the Rijang and the Sivok on the right bank.

The rivers to the west of Teesta are the Mahananda, the Balason and the Mechi.

The rivers of the district are mainly utilised for floating the logs and generation of hydel power. Incidentally the first hydel power plant of India was set up at Sidrapong near Darjeeling in 1897 (Lama and Sarkar (ed.), 1986).

### **Climate**

Due to tremendous variation of altitude, differences in aspects, the climate within the hill areas vary greatly. In general the hill areas enjoy pleasant summer, heavy rain in rainy season due to strong monsoon winds and cold winter often added with snowfall in higher altitudinal areas.

Summers (lasting from May to June) are mild, with maximum temperatures barely crossing 25 °C (77 °F). The monsoon season (June to September) is characterized by torrential monsoon rains that lash the towns. The monsoons are severe, often causing landslides that often block Darjeeling's land access to the rest of

the country. In the hilly tract of the district the atmosphere is highly humid throughout the year, and relative humidities are between 90 percent and 95 percent in the south-west monsoon. Winters (December to February) see average temperatures averaging 5–7 °C (41–44 °F). Occasionally the temperature may drop below freezing, inducing rare snowfall. During the monsoon and winter seasons, Darjeeling is often shrouded in mist and fog.

The annual mean maximum temperature is 12°C (53°F) at Darjeeling and the mean minimum temperature is 1.7°C (35°F); monthly mean temperatures range from 5–17°C (41–62°F). At Kalimpong both the maximum and the minimum are higher – being 26.7°C (80°F) and 7.8°C (46°F) respectively. The highest temperature ever recorded in the district was 26.7°C (80.1°F) at Darjeeling, while at Kalimpong it was 31.1°C (88°F) on 23 August 1957. The lowest ever recorded was -5°C (23°F) on 11 February 1905 at Darjeeling and 0.6°C (30.9°F) on 27 December 1922 at Kalimpong (Ray, 1967).

The average annual precipitation in Darjeeling is about 3000 mm; with the highest average precipitation occurring in July (75.3 cm or 29.6 in) while the average annual precipitation in Kalimpong is about 2000 mm and in Kurseong is about 4000 mm. The rainfall during the south-west monsoon season constitutes about 80 percent of the annual rainfall.

## **Soils**

The Himalayas consist primarily of metamorphic rocks; extensive areas of igneous rocks are in the south. Paleozoic and Mesozoic marine sediments are found in several regions.

The soil is chiefly composed of sandstone and conglomerate formations, which are the solidified and up heaved detritus of the great range of Himalaya in their rear. However, the soil is often poorly consolidated. The permeable sediments and poorly developed soils of the region do not retain water between rains and is usually considered not suitable for agriculture. The area has steep slopes and soft, loose topsoil, leading to frequent landslides in the monsoon season. Some of the wet, deep, upland soils of this type in the eastern Himalayas mainly in the Darjeeling Hills and in

the Assam Valley have a high humus content that is good for growing tea, cardamom, citrus fruits and few other crops.

The soil of the district shows multiple varieties ranging from red-clay and sandy loam grey-brown forest soil. The forest soil of the hills is rich in organic matter and being developed under forest cover act as cushions on rainwater. In the hills the cultivators recognize only three kinds of soil, namely, white, red and black. Of these the black soil is the richest, the white the poorest, the red soil occupies an intermediate position, requiring heavy manuring to give as good an outturn as the black. The fertility of the soil depends much on the geological formation of the underlying rocks from which the soil is derived. Generally soils throughout the district are deficient in lime.

Of the total area of Darjeeling Himalaya about 33 percent of the land is under forest. Farmlands cover about 18 percent of the total area. Whereas 44 percent of the land are not available for cultivation. The rest are put to miscellaneous uses. It has already been stressed that the bulk of the valuable land resources of the district has been rendered unproductive by deforestation being followed by landslides, especially after monsoon downpour, thereby exposing the bare rock surface to the vagaries of soil erosion (Lama and Sarkar (ed.), 1986).

### **Minerals**

The metamorphic rocks of Darjeeling and Daling series contain deposits of copper, nickel, iron, mica and precious stones. Lying south to the metamorphic occur the Gondwanaland belt, passing through Tindharia. This bed contains fairly good deposit of anthracite coal but due to pressure facies of the Himalayan progeny, coal has become extremely friable and as such unless formed into briquettes it cannot be used for commercial purpose. Lying further south is a thin belt of Tertiary and Pleistocene terrace beds and gravels where some deposits of lime are found. Stones from the hilly section are often quarried for building and road construction (Lama and Sarkar (ed.), 1986).

### 2.3 Brief History of Darjeeling

Little is known about the early history of Darjeeling. The area was historically part of the kingdom of Sikkim. In 1706 what is now the Kalimpong subdivision of the district was taken from the Raja of Sikkim by the Bhutanese (Ray, 1967). In 1780, the Gorkhas marched into Sikkim, annexed the Terai, advanced to the Teesta River and set off a conflict they had not bargained for. They had trodden on the toes of the East India Company, the war of 1814 was fought with Nepal, the tract ceded by the treaty of Titaliya in 1817, and the Raja of Sikkim was reinstated with his sovereignty guaranteed by the Company. Sikkim, including Darjeeling, became a buffer state between Nepal and Bhutan (Kar). Ten years later the dispute broke out afresh. In 1828, another dispute occurred between Nepal and Sikkim. Two Officers, Captain Lloyd and Mr. Grant were deputed in 1828 to deal with the disputes.

They however found the Darjeeling region very suitable as a sanatorium for British troops. The company negotiated with the king of Sikkim to lease the area starting in 1835. Dr. Campbell, a member of the Indian Medical Service and Lieutenant Napier were given the responsibility to found a hill station there. Thus in 1835 the king of Sikkim through a Deed of Grant gave a portion of the Darjeeling hills to the British for establishing a sanatorium. This was an unconditional cession. But the government granted the Raja an allowance of Rs. 3000 as compensation and raised the grant to Rs. 6000 in 1846.

After the cession, General Lloyd and Dr. Chapman were sent in 1836 to explore and investigate the climate and the capabilities of the place. By 1840, a road had been made from Pankhabari. There were staging bungalows at Pankhabari and at Mahaldiram. A hotel had been started at Kurseong and another at Darjeeling. Thirty private houses had been erected at Darjeeling and nearly as many 'locations' or building sites had been taken up at Lebong.

The rest of the ceded area was however under forest and practically uninhabited. According to Captain Herbert, this was because about ten years previously (i.e., in 1830s) 1200 able-bodied Lepchas forming two-thirds of the population of Sikkim had been forced by the oppression of the Raja to fly from Darjeeling and its neighbourhood and take refuge in Nepal. What little cultivation

there had been was abandoned and the Raja prohibited his subjects from going to Darjeeling and helping in the establishment of new settlements (Ray, 1967).

In 1839, Darjeeling got its first Superintendent, Dr. Campbell. He was given the charge of political relations with Sikkim besides, running the civil, criminal and fiscal administration, when he found time; he also acted as Postmaster, Marriage Registrar and Administrator of the station funds. Campbell built the district and laid the foundation of the, now multi-million dollar tea industry in 1841. Twenty-five years later, there were already 40 gardens in 10,000 acres with an outturn of half a million pounds. Immigrants poured in. Dr. Campbell gave much encouragement to immigrant cultivators and population rose from about 100 in 1839 to about 10000 in 1849.

The Darjeeling Municipality was established in 1850. In the same year Terai was annexed and a portion of the Sikkim hills bounded by Rammam and Great Rangeet on the north, by the Teesta on the east and by the Nepal frontier on the west also came under Darjeeling. The new territory, 640 sq. miles, suitable for tea cultivation, was placed under the Superintendent of Darjeeling, which was linked with Jalpaiguri and Purnea on the south. To the west of the new territory was Nepal; to the east was Bhutan. The treaty put an end to the sufferings of the residents of Darjeeling, but the peace was interrupted by the incursions of the Bhutanese into the district. A large force was sent in the winter of 1864 and ultimately the whole of the Dooars was occupied, the Kalimpong police circle was added. In the meanwhile Kurseong was developing and it was made head quarter of a new sub-division in 1891. Separated from the Kurseong sub-division, Siliguri was made a new sub-division in 1907. Kalimpong sub-division was created in 1916 (Ray, 1967).

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 8, 1934 by Bengali 'terrorists' (Banerji, et. al., 1980).

Darjeeling was declared a Non-Regulation District till March 1937 (Subba, 1985). Thus acts and regulations did not automatically come into force in the district in line with rest of the country unless they were extended to it. The district was

included in the Rajshahi Division until October 1905 when it was transferred to the Bhagalpur Division. With the rearrangement of the provinces it was retransferred to the Rajshahi Division in March 1912 (Ray, 1967). The town lacked any major contribution to the freedom struggle of India probably due to the moderate political climate prevailing in the region. However, the revolutionaries attempted to assassinate Sir John Anderson, the Governor of Bengal in Darjeeling.

After the independence of India in 1947, Darjeeling became a part of the state of West Bengal. A separate district of Darjeeling was established consisting of the hilly towns of Darjeeling, Kurseong, Kalimpong and some parts of the Terai region. The district was placed thereafter in the Presidency Division (Ray, 1967). After the People's Republic of China annexed Tibet in 1959, thousands of Tibetans fled to India, migrating to several places in the district, including Darjeeling. The district is at present under the Jalpaiguri Division (Ray, 1967).

Between 1986 and 1988, the demand for the creation of the separate states of Gorkhaland and Kamtapur along ethnic lines grew strong. Matters came to a head after a forty-day strike called by the Gorkha National Liberation Front (GNLF) during which rioting occurred. The Darjeeling town was virtually under siege, causing the state government to call in the Indian army to maintain law and order. The movement ended with the establishment of Darjeeling Gorkha Hill Council (DGHC) under the Chairmanship of Subash Gishing. DGHC was given semi-autonomous powers to govern the district. Later the name of DGHC was changed to Darjeeling Gorkha Autonomous Hill Council (DGAHC). Though Darjeeling is now peaceful, the issue on a separate state still lingers.

The Gorkha-dominated hill areas of the whole Darjeeling district are under the jurisdiction of the Darjeeling Gorkha Autonomous Hill Council since its formation in 1988. The DGHC's elected Councilors are authorised to manage certain affairs of the hills, including education, health, and tourism. The DGHC was formed after large-scale unrest among the Nepali-speaking Gorkha people, in which the Gorkha National Liberation Front (GNLF) had sought to carve a separate state out of West Bengal for Nepali speakers.

Darjeeling is a part of the Darjeeling Lok Sabha (Indian Parliament's Lower House) constituency. The Darjeeling hill areas elect three members to the West Bengal state Legislative Assembly (Vidhan Sabha). Indian National Congress won the Lok Sabha seat in Indian general elections, 2004 while the state assembly seats were owned by GNLFF in 2006. Unlike many other Indian cities, Darjeeling does not have its own police commissioner. Instead, it comes under the jurisdiction of the district police (which is a part of the state police); a Deputy Superintendent of Police oversees the town.

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## **CHAPTER III**

### **Demographic Pattern in Darjeeling**

- **Growth of Population**
  - **Introduction**
  - **Growth of Population in Darjeeling**
- **Composition of Population**
- **Distribution of Population**
  - **Distribution of Population According to Sex**
  - **Rural and Urban Distribution of Population**
  - **Marital Status**
- **Conclusions**

## CHAPTER III

### Demographic Pattern in Darjeeling

#### 3.1 Growth of Population

##### 3.1.1 Introduction

Populations have a birth rate, that is, the number of young produced per unit of population per unit of time and a death rate, that is, the number of deaths per unit of time and a growth rate. The major agent of population growth is births, and the major agent of population loss is deaths. When births exceed deaths, a population increases; and when deaths exceed additions to a population, it decreases. When births equal deaths in a given population, its size remains the same, and it is said to have zero population growth.

The rate of population growth is the rate of natural increase combined with the effects of migration. Thus a high rate of natural increase can be offset by a large net out-migration, and a high level of net in-migration can counter a low rate of natural increase. Generally speaking, however, these migration effects on population growth rates are far smaller than the effects of changes in fertility and mortality.

An important and often misunderstood characteristic of human populations is the tendency of a highly fertile population that has been increasing rapidly in size to continue to do so for decades after the onset of even a substantial decline in fertility. These populations contain large numbers of children who have still to grow into adulthood and the years of reproduction. Thus even a dramatic decline in fertility, which affects only the numbers at age zero, cannot prevent the continuing growth of the number of adults of child bearing age for at least two or three decades.

Eventually, of course, as these large groups pass through the child bearing years to middle and older age, the smaller numbers of children resulting from the fertility decline lead to a moderation in the rate of population growth. But the delays are lengthy; allowing very substantial additional population growth after fertility has declined. This phenomenon gives rise to the term population momentum, which is of great significance to developing countries with rapid population growth and limited natural resources.

When introduced into a favourable environment with an abundance of resources, a small population may undergo geometric or exponential growth in the manner of compound interest. Many populations experience exponential growth in the early stages of colonizing a habitat because they take over an under exploited niche or drive other populations out of a profitable one. Those populations that continue to grow exponentially, however, eventually reach the upper limits of the resources; they then decline sharply because of some catastrophic event such as starvation, disease, or competition from other species.

If the aim of economic development is to raise the level of per capita incomes, it is obvious that this can be achieved both by increasing the rate of growth of total output and by reducing the rate of growth of population. As soon as birth rates stop rising, the relative increase in population in the working-age groups and the higher income available to existing family members immediately start to release resources for increasing consumption and saving.

In 1798 Malthus published anonymously the first edition of 'An Essay on the Principle of Population as it affects the Future Improvement of Society, with Remarks on the Speculations of Mr. Godwin, M. Condorcet, and other Writers'. In which he argued that infinite human hopes for social happiness must be vain, for population will always tend to outrun the growth of production. The increase of population will take place, if unchecked, in a geometrical progression, while the means of subsistence will increase in only an arithmetical progression. Population will always expand to the limit of subsistence and will be held there by famine, war, and ill health.

### **3.1.2 Growth of Population in Darjeeling**

Darjeeling district offers the most remarkable example of growth of population stemming mainly from immigration from outside. At the time of the cession of the greater part of Darjeeling Sadar subdivision, comprising 357.4 sq. km. (138 sq. miles), by the Raja of Sikkim to the British in 1835, the tract was wholly covered by forests and it has been said that there were not even twenty resident families or households in that area.

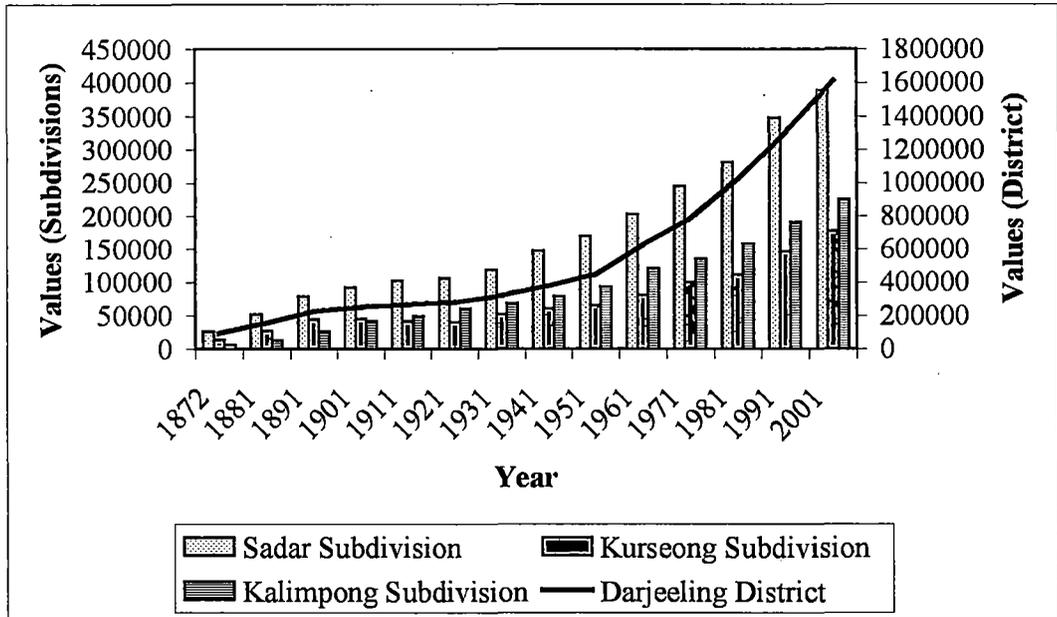
The period of Dr. Arthur D. Campbell's Superintendent ship from 1839 saw the growth of settlements and of population in the district. On becoming the Superintendent in Darjeeling Campbell took vigorous steps to attract settlers to the region and his measures proved so successful that by 1849, that is, seven years before any tea garden was established in the district, he was able to report that the number of inhabitants had risen to 10000. In 1869, when a rough census was taken, there were only 22000 inhabitants.

**Table – 3.1: Population in Darjeeling, 1872-2001**

Year	Darjeeling District	Sadar Subdivision	Kurseong Subdivision	Kalimpong Subdivision
1872	94412	26591	13690	6446
1881	155179	52318	26937	12683
1891	223314	79041	44645	26631
1901	249117	91953	45187	41511
1911	265550	102577	41207	49520
1921	282748	106511	40357	60093
1931	319635	119178	51996	68203
1941	376369	147327	59986	79042
1951	445260	169631	65713	93441
1961	624640	203523	80743	120526
1971	781777	245207	100233	134538
1981	1024269	281346	111302	158726
1991	1299919	347912	146640	190266
2001	1609172	388107	177264	225220

Source: Compiled by this scholar from Mitra, A: Census 1951, West Bengal, District Census Handbook, Darjeeling, Bengal Government Press, 1954, Development Plan for North Bengal (An Approach) Calcutta Metropolitan Planning Org., Development and Planning (T & CP) Department, Govt. of West Bengal and District Statistical Handbook 2005, Darjeeling, Bureau of Applied Economics and Statistics, Government of West Bengal

**Figure – 3.1: Population in Darjeeling Hill Areas**



During 1891–1901 the hills were very healthy. From table – 3.1 it can be seen that the increase of population was greatest in Kalimpong, where the wasteland was rapidly brought under cultivation by new settlers, chiefly, from Nepal. Already during, 1901-11 the population showed a decline in the rate of increase and shrinkage of the volume of immigration. Between 1872 and 1921 the district experienced phenomenal growth, but between 1901-51 the happy period of expansion and carefree production in an expanding market was over and the rate of growth during this period 1901-51 was very much less than half of the period 1872-1921. During 1911-21 the influenza epidemic caused great mortality in the hills and hung about longer than in the plains. During 1921-31 there was less immigration from Nepal. During 1931-41 there was a severe earthquake in January 1934 when a large number of old buildings in Darjeeling town and Tindharia collapsed. In 1935 there was heavy flood in Mechi (Mitra, 1954). During the sixty-year period from 1941 to 2001 the population of the three hill subdivisions were increased rapidly. For the Sadar subdivision the increase in population was more than three times. For Kurseong subdivision the same was nearly three times and also for Kalimpong subdivision the increase in population was nearly three times. The increasing trend in population is depicted in figure – 3.1

**Table – 3.2: Profile of Darjeeling District**

Year	Total Geographical area in Sq. Km.	Total Population	Density of Population No. Per Sq. Km.
1901	3015	249117	83
1921	3015	282748	94
1941	3087	376369	122
1961	3108	624640	201
1981	3149	1024269	325
2001	3149	1609172	511

Source: Compiled by this scholar from Lama Mahendra P and R L Sarkar (ed.), The Eastern Himalayas-Environment and Economy, Atma Ram & Sons, 1986 and District Statistical Handbook 2005, Darjeeling, Bureau of Applied Economics and Statistics, Government of West Bengal

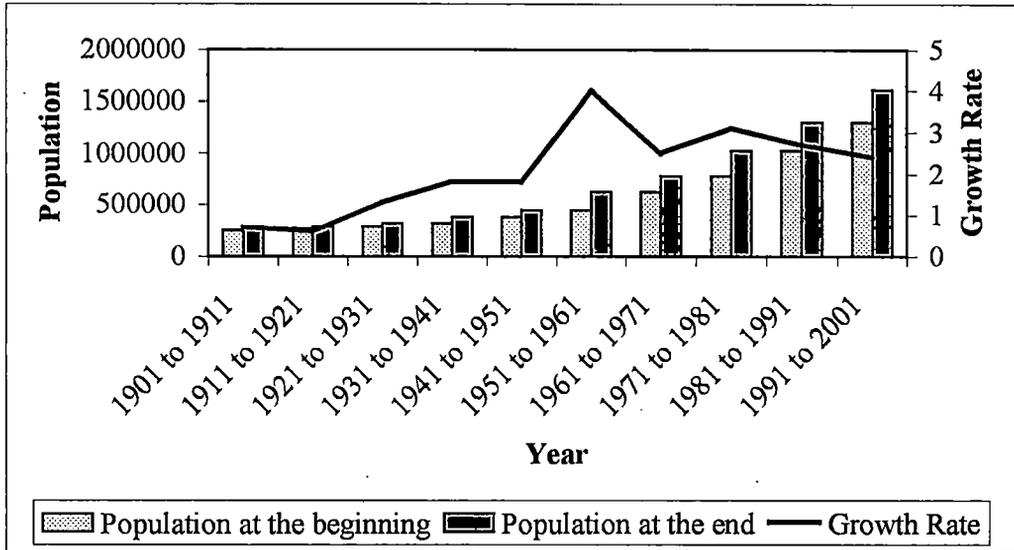
We can see from table – 3.2 that the density of population per square kilometre in Darjeeling district has been increasing gradually. During the sixty years from 1941 to 2001 it had been increased more than four times. So we can say that the growth rate of population was quite high during that period.

**Table – 3.3: Growth Rates of Population for Different Periods**

Period	Population at the beginning	Population at the end	Growth Rate
1901 to 1911	249117	265550	0.7
1911 to 1921	265550	282748	0.6
1921 to 1931	282748	319635	1.3
1931 to 1941	319635	376369	1.8
1941 to 1951	376369	445260	1.8
1951 to 1961	445260	624640	4.0
1961 to 1971	624640	781777	2.5
1971 to 1981	781777	1024269	3.1
1981 to 1991	1024269	1299919	2.7
1991 to 2001	1299919	1609172	2.4

Source: Compiled by this scholar from Table – 3.1

**Figure – 3.2: Growth Rates of Population for Different Periods**



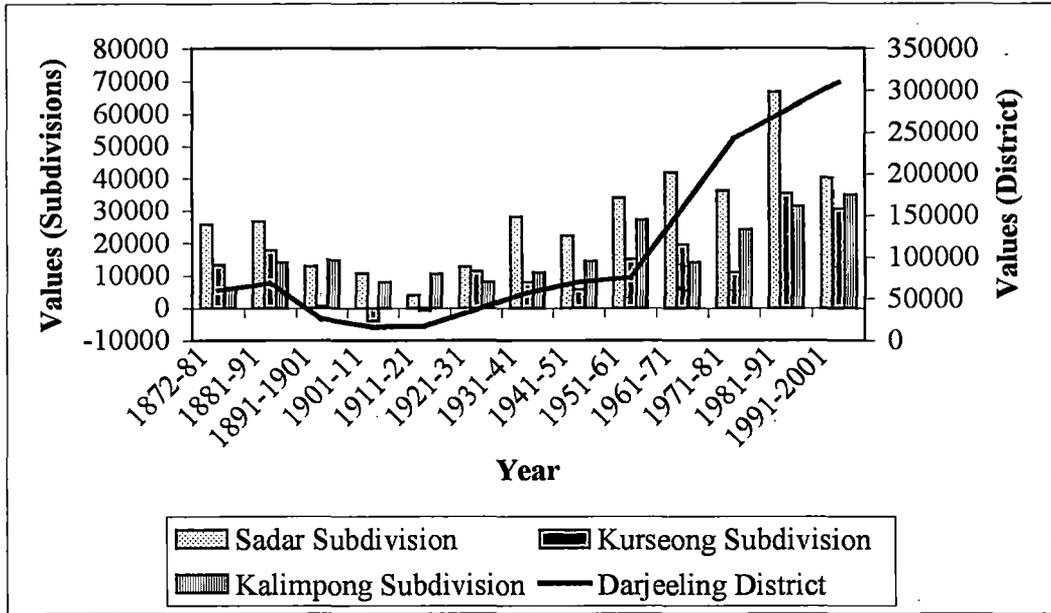
The growth rate of population in the early part of the century was low. However from table – 3.3 it can be seen that during the period 1951-61 the growth rate of population was highest in the century. The growth rates of population for different periods are depicted in figure – 3.2.

**Table – 3.4: Population Variation of Darjeeling District, 1872-2001**

Year	Darjeeling District	Sadar Subdivision	Kurseong Subdivision	Kalimpong Subdivision
1872-81	+60467	+25727	+13247	+6237
1881-91	+68135	+26723	+17708	+13948
1891-1901	+25803	+12912	+542	+14880
1901-11	+16433	+10624	-3980	+8009
1911-21	+17198	+3934	-850	+10573
1921-31	+36887	+12667	+11369	+8110
1931-41	+56734	+28149	+7990	+10839
1941-51	+68891	+22304	+5727	+14399
1951-61	+75023	+33892	+15030	+27085
1961-71	+157137	+41684	+19490	+14012
1971-81	+242492	+36139	+11069	+24188
1981-91	+275650	+66566	+35338	+31540
1991-2001	+309253	+40195	+30624	+34954

Source: Compiled by this scholar from Mitra, A: Census 1951, West Bengal, District Census Handbook, Darjeeling, Bengal Government Press, 1954 and Development Plan for North Bengal (An Approach) Calcutta Metropolitan Planning Org., Development and Planning (T & CP) Department, Govt. of West Bengal

**Figure – 3.3: Population Variation of Darjeeling District, 1872-2001**



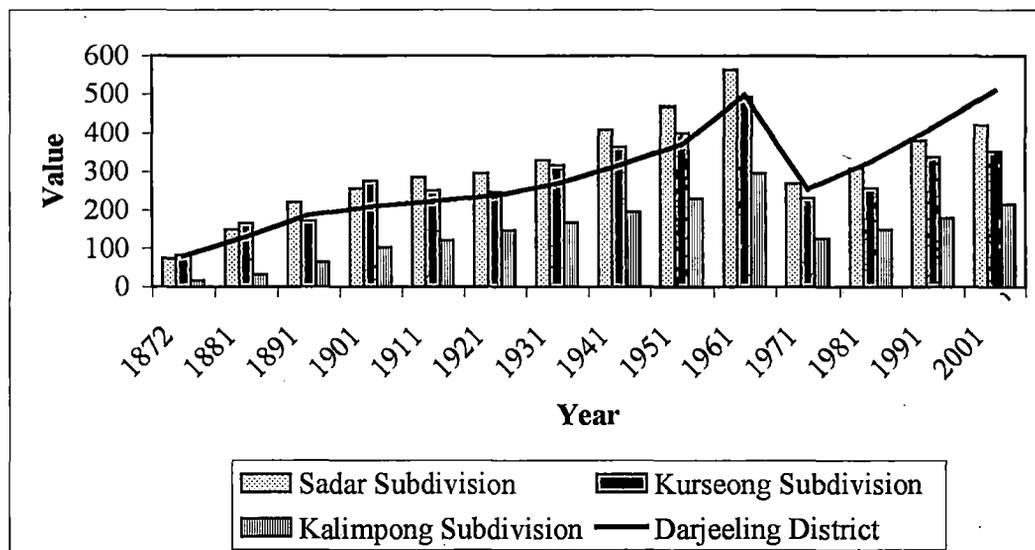
Between 1872 and 1881 the population had increased by 63.8 percent and during the next decade by 43.9 percent. The growth rate registered a drop to 11.6 percent during 1891-1901 and a further drop to 6.5 percent during 1901-11, which remained almost the same in the following decade. During 1901-11 most of the population growth took place in Kalimpong subdivision, which recorded a 19.3 percent rise in population, Sadar (Darjeeling) subdivision recorded 11.6 percent, while Kurseong suffered a decrease of 8.8 percent. During 1911-21 when the district recorded a 6.5 percent population increase, Kalimpong subdivision an even better growth, while Darjeeling (Sadar) showed a decline. During 1921-31 the district recorded a 13 percent growth in population, followed by a 17.7 percent increase in 1931-41. Migration, density of population and patterns of distribution of settlements are important considerations for development. The growth of population is quite high in Darjeeling region and the population became double in between 1931 to 1971 and this rapid growth is partly due to migration from other areas (Lama and Sarkar (ed.), 1986). From table – 3.4 it can be seen that during 1971-2001 the population had increased gradually for Sadar and Kalimpong subdivisions but for Kurseong subdivision the population had increased more than double. The population variation in Darjeeling district is depicted in figure – 3.3.

**Table – 3.5: Variations in Density (Persons Per Square Mile), 1872-2001**

Year	Darjeeling District	Sadar Subdivision	Kurseong Subdivision	Kalimpong Subdivision
1872	79	74	83	16
1881	129	149	164	31
1891	186	219	171	65
1901	208	255	275	102
1911	221	284	251	121
1921	236	295	246	147
1931	266	330	317	167
1941	314	408	365	194
1951	371	470	400	229
1961	497	563	492	295
1971	254	268	230	125
1981	325	307	256	148
1991	413	380	337	177
2001	511	421	352	214

Source: Compiled by this scholar from Mitra, A: Census 1951, West Bengal, District Census Handbook, Darjeeling, Bengal Government Press, 1954, Ray B: Census 1961, West Bengal, District Census Handbook, Darjeeling, Bengal Government Press, 1967, Census 1971, Series 22, West Bengal, Part X – A & B, District Census Handbook, Darjeeling, Ghosh, S. N.: Census of India 1981, Series 23, West Bengal, District Census Handbook, Part XIII – A, Village and Town Directory, Darjeeling District, Published by the controller, Government Printing, Calcutta, 1988, Census of India 1991, Series 26, West Bengal, District Census Handbook, Darjeeling District, Part XII – B and District statistical hand book 2004, Darjeeling, Bureau of applied economics and statistics, Government of West Bengal

**Figure – 3.4: Variations in Density, 1872-2001**



From table – 3.5 it can be seen that from 1872 to 1961 the density of population had increased gradually and reached its highest point in the three hill subdivisions as well as in the district also. But in 1971 it suddenly decreased to half of the values of 1961. Again the density of population gradually increased and in 2001 it became two times greater than the 1971 values. The variations in density from 1871 to 2001 are depicted in figure – 3.4.

During 1901-11 there was a decline in the rate of growth of population. The explanation was that there was only a limited area in which there was room for an increase in population. Reserved forests covered over one-third of the district, while the tea gardens extended over about one-seventh of its area. While they were being opened out and developed, labour poured in and a phenomenal growth of population resulted. Then, all the land suitable for cultivation, within the area reserved for it, had been taken up; on the tea gardens, therefore, no considerable increase of population can be expected. As it is, tea occupied a third of the cropped area and the tea gardens employed a labour force of 53000 or one-fifth of the total population of the district. As regarded ordinary cultivation, only one-third of the district was cultivable, and it cannot, therefore, hoped to support a teeming agricultural population. Even in Kalimpong, where nearly half of the land was reserved for native cultivation, it was recognized that it had reached the limit of safety in some parts, and in such localities it had been found necessary to prohibit further extension.

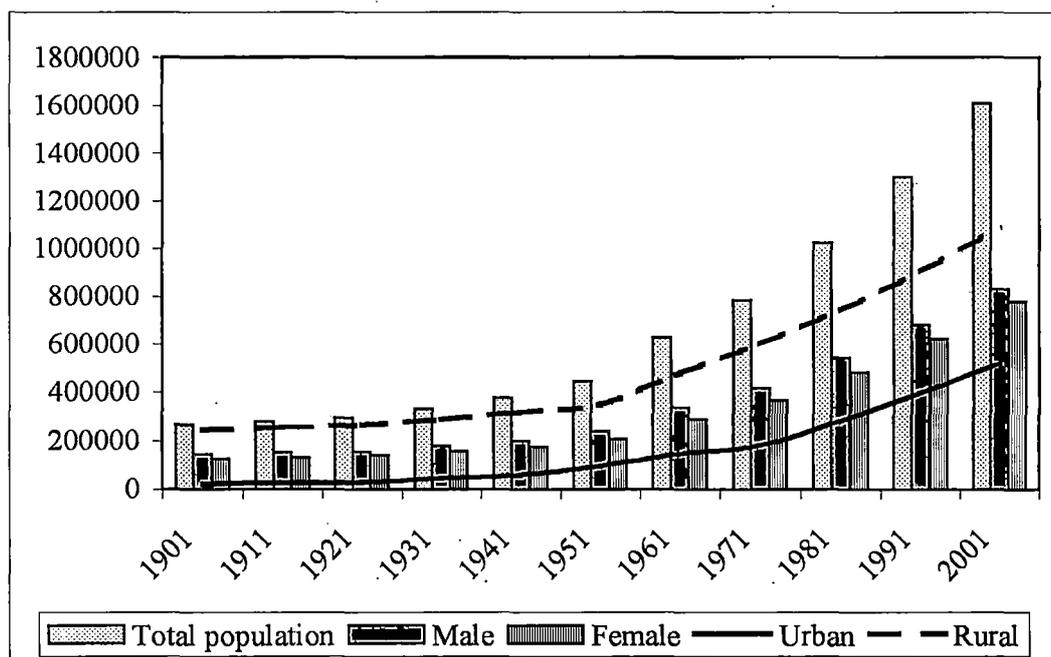
**Table – 3.6: Growth of Population by Sex on Different Census Years in the District of Darjeeling**

Year	Total population	Index with 1901 as base	Male	Female	No. of female per 100 males	Urban	Rural	Percentage of rural population to total population
1901	265780	100	141697	124083	88	21393	244387	91.95
1911	279899	105	149636	130263	87	24579	255320	91.22
1921	294237	111	155014	139223	90	28703	265534	90.24
1931	332061	125	176551	155510	88	43479	288582	86.91
1941	376269	142	199891	176478	88	58167	318202	84.55
1951	445260	168	239018	206242	86	94481	350779	78.78
1961	624640	235	335036	289604	86	144637	480003	76.84
1971	781777	294	415442	366335	88	180212	601565	76.95
1981	1024269	385	542567	481702	89	282153	742116	72.45
1991	1299919	489	679323	620596	91	396060	903859	69.53
2001	1609172	605	830644	778528	94	520432	1088740	67.66

Source: District statistical handbook 2004, Darjeeling, Bureau of applied economics and statistics, Government of West Bengal

From table – 3.6 it can be seen that during 1901-2001 percentage of rural population to total population was gradually decreased. During 1901-2001 the number of male population increased by nearly three times and the number of female population increased by more than three times. The number of female per 100 males decreased during 1901-11. But it increased during 1911-21. Although it again decreased during 1921-61. From 1861 onwards the number of female per 100 males increased again. The growth of population by sex and rural urban distribution of population is depicted in figure – 3.5.

**Figure – 3.5: Growth of Population by Sex on Different Census Years in the District of Darjeeling**



### 3.2 Composition of Population

The most important characteristics of a population – in addition to its size and the rate at which it is expanding or contracting – are the ways in which its members are distributed according to age, sex, ethnic or racial category, and residential status (urban or rural).

The Bengal Census of 1872 returned the population of the district at 94712 persons (males, 53057; females, 41655) thus classified: - Hindus, 69831; Mohammedans 6248; Buddhists, 1368; Christians, 556; others, 16709. The inhabitants of the hilly tract consists to a large extent of Nepali immigrants and of aboriginal highland races, in the ‘Terai’ the people are chiefly Hindus and Mohammedans. The Lepchas are considered to be the aboriginal inhabitants of the hilly portion of the district. They have no caste distinctions, but speak of themselves as belonging to one of one septs or clans, who all eat together and intermarry with each other. In the upper and northern Terai, along the rise of the hills, the Mechs form the principal ethnical nature.

The population in 1881 was 155645 and in 1891 was 223314, giving an average density of 192 persons per sq. mile. Classified according to religion, Hindus numbered 171171, Mohammedans 10011, Buddhists 40600, Christians 1502 of which 1049 were Europeans, "others" 30. In 1901 the population was 249232 showing an increase of 12 percent, compared with an increase of 43 percent in the previous decade. The land revenue and rates were Rs. 165806, the number of police was 395, the number of boys at school in 1896 – 97 was 2938, being 15.9 percent of the male population of school – going age, the registered death rate in 1897 was 42.16 per thousand.

When a census was taken in 1891, it was found that out of the district population of 223314 persons, 88000 were born in Nepal. Even this figure failed to reflect correctly the bulk of the population of Nepalese origin in the district as it excluded those whose parents or grandparents were born in Nepal. In 1901 it was found that 61 percent of the population was of Nepalese origin; 27 percent were tribes and scheduled castes; while the Bhutias formed a bare 3 percent and the Tibetans 1 percent of the population. The remaining 4 percent was made up of people belonging to "upper" Hindu castes, Muslims and non-tribal Christians from the plains, and Europeans. In 1931 people of Nepalese extraction including the Sherpas and Limbus formed about 52 percent, the tribes and scheduled castes from Indian plains approximately 21 percent, the Lepchas and the Sikkimese Tibetans about 4 percent, the Bhutanese about 1 percent and the Tibetans about 1 percent of the total population. The rest of the population was made up of people belonging to "upper" Hindu castes, Muslims and non-tribal Christians from the Indian plains, and Europeans.

Turning our attention to the quantum of population growth from decade to decade as revealed by the census counts, we find that the census of 1872 was considered defective. There was an immense concealment of females in 1881. Many of them fled on the census night over the frontier into Nepal. Labourers absconded from tea gardens, from panic and other causes. It was believed that the census of 1891 for the first time took a satisfactory count. During 1891-1901 the hills were very healthy. On the other hand, the terai was notoriously malarious and mortality was very heavy. The Siliguri – Darjeeling railway line was opened in 1880-1881. And this

last factor partially offset the climatic disadvantage even in the Terai. It facilitated the growth of already existing Indo-Tibet, Indo-Sikkimese and Indo-Bhutanese trade thereby increasing employment potential in the tertiary sector of places situated on the railway line (Banerji, et. al., 1980).

### 3.3 Distribution of Population

#### 3.3.1 Distribution of Population According to Sex

**Table – 3.7: Sex Ratio (Females Per 1000 Males), 1901-2001**

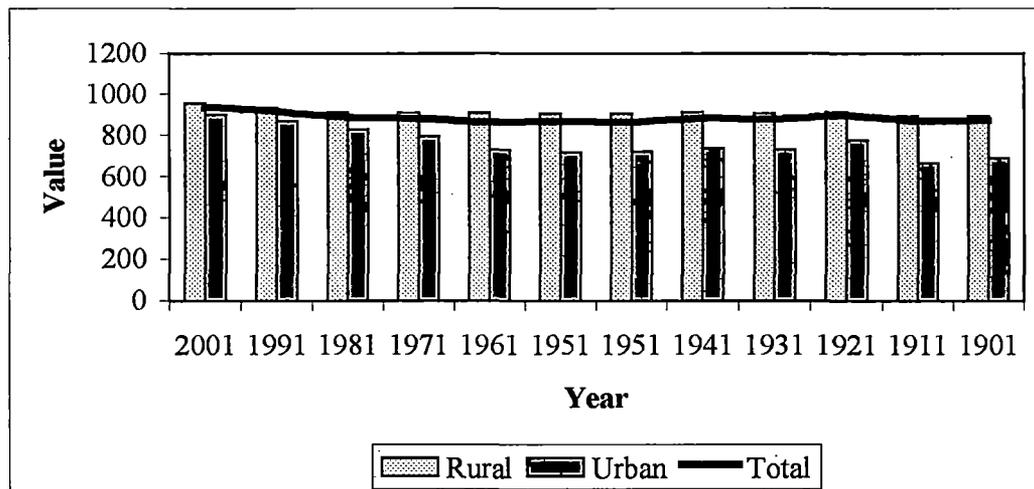
	2001	1991	1981	1971	1961	1951	1951	1941	1931	1921	1911	1901
Total	937	914	888	882	864	867	863	883	879	896	869	873
Rural	956	934	911	910	909	907	905	912	905	911	892	892
Urban	899	868	830	793	731	717	721	736	728	777	666	690

Source: Compiled by this scholar from Mitra, A: Census 1951, West Bengal, District Census Handbook, Darjeeling, Bengal Government Press, 1954 Ray B: Census 1961, West Bengal, District Census Handbook, Darjeeling, Bengal Government Press, 1967, Census 1971, Series 22, West Bengal, Part X – A & B, District Census Handbook, Darjeeling, Ghosh, S. N.: Census of India 1981, Series 23, West Bengal, District Census Handbook, Part XIII – A, Village and Town Directory, Darjeeling District, Published by the controller, Government Printing, Calcutta, 1988, Census of India 1991, Series 26, West Bengal, District Census Handbook, Darjeeling District, Part XII – B and District statistical hand book 2004, Darjeeling, Bureau of applied economics and statistics, Government of West Bengal

From table – 3.7 it can be seen that during 1901-11 females per 1000 males for total population had decreased. It had increased during 1911-21. Again it had decreased during 1921-31 and increased during 1931-41. This trend of decreasing and increasing was followed during the years 1941-51, 1951-61, 1961-71 and 1971-81 respectively. During 1981-2001 females per 1000 males for total population had increased. During 1901-21 females per 1000 males for rural population had increased. During 1921-31 it had decreased. Again during 1931-41 it had increased. But during 1941-51 the same had again decreased. During 1951-2001 females per 1000 males for rural population had increased gradually. 1901-11 females per 1000 males for urban population had decreased. It had increased during 1911-21. Again it had decreased during 1921-31 and increased during 1931-41. This trend of decreasing and increasing

was followed during the years 1941-51, 1951-61, 1961-71 and 1971-81 respectively. During 1981-2001 females per 1000 males for urban population had increased. This trend is depicted in figure – 3.6.

**Figure – 3.6: Sex Ratio (Females Per 1000 Males), 1901-2001**



### 3.3.2 Rural and Urban Distribution of Population

Darjeeling, Kurseong and Kalimpong became municipal towns in 1850, 1879 and 1945. Kalimpong was, however, growing as urban centre by virtue of its being the headquarter of the respective subdivision as also important entrepot markets served by a communication network with Tibet, Sikkim and Bhutan. The waning of trade between India and Tibet has affected Kalimpong adversely.

The following table indicates the rural and urban distribution of population in the district as also the percentage shares (shown within brackets) of rural and urban areas to the total district population in 1901, 1931, 1961 and 1991 from which the progress of urbanization will be apparent.

**Table – 3.8: Distribution of Population in Rural and Urban Areas of Darjeeling District in Absolute Numbers and in Percentages**

District/ Subdivisions	1901		1931		1961		1991	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Darjeeling District	219871 (90.44)	23246 (9.56)	276156 (86.40)	43479 (13.60)	480003 (76.85)	144637 (23.16)	903859 (69.53)	396060 (30.47)
Sadar Subdivision	75028 (81.59)	16925 (18.41)	97993 (82.23)	21185 (17.77)	162872 (80.03)	40651 (19.97)	274850 (78.99)	73062 (21.00)
Kurseong Subdivision	40718 (90.11)	4469 (9.89)	44544 (85.67)	7451 (14.33)	67333 (83.40)	13410 (16.61)	119882 (81.76)	26758 (18.25)
Kalimpong Subdivision	40442 (97.43)	1069 (2.57)	59427 (87.14)	8776 (12.86)	95421 (79.17)	25105 (20.83)	151434 (79.59)	38832 (20.41)

Source: Compiled by this scholar from Banerji, Amiya Kumar, et. al.: West Bengal District Gazetteers – Darjeeling, 1980 and Development Plan for North Bengal (An Approach) Calcutta Metropolitan Planning Org., Development and Planning (T & CP) Department, Govt. of West Bengal

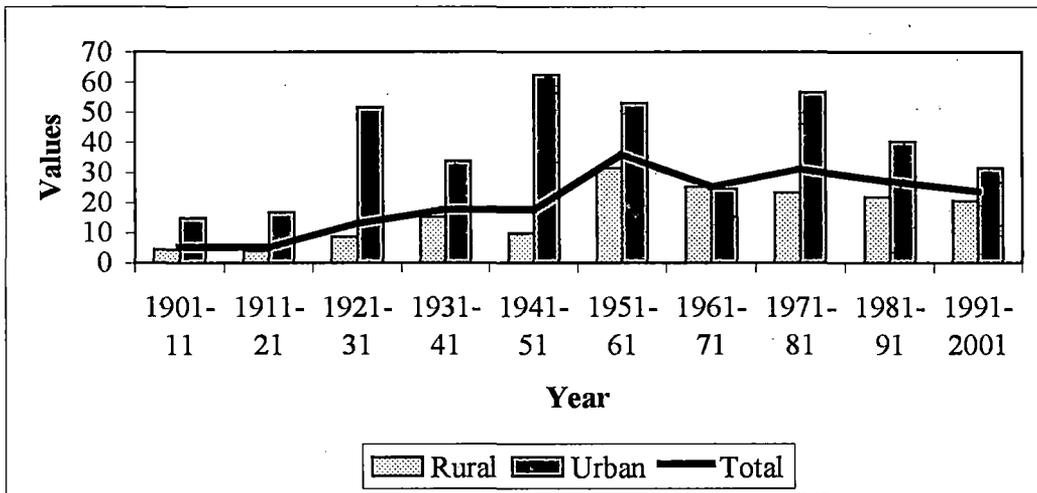
From table – 3.8 it can be seen that during 1901-1991 the percentage of rural population had decreased gradually for Kurseong and Kalimpong subdivisions and for the district as well. For the Sadar subdivision the percentage of rural population had increased firstly and then it had decreased gradually. During 1901-1991 the percentage of urban population had increased two times for Kurseong and ten times for Kalimpong subdivisions and more than three times for the district as well. For the Sadar subdivision the percentage of urban population had decreased at first and then it had increased gradually.

**Table – 3.9: Percentage Variations of the District’s Population, 1901-2001**

	1901-11	1911-21	1921-31	1931-41	1941-51	1951-61	1961-71	1971-81	1981-91	1991-2001
Total	+5.3	+5.1	+12.9	+17.7	+17.6	+35.9	+25.2	+31.0	+26.9	+23.8
Rural	+4.5	+4.0	+8.7	+15.3	+9.7	+31.5	+25.3	+23.4	+21.8	+20.5
Urban	+14.9	+16.8	+51.5	+33.8	+62.4	+53.1	+24.6	+56.6	+40.4	+31.4

Source: Banerji, Amiya Kumar, et. al.: West Bengal District Gazetteers – Darjeeling, 1980 and Development Plan for North Bengal (An Approach) Calcutta Metropolitan Planning Org., Development and Planning (T & CP) Department, Govt. of West Bengal

**Figure – 3.7: Percentage Variations of the District’s Population, 1901-2001**



Darjeeling, Kalimpong and Kurseong are three important hill towns and urban centres. From table – 3.9 it can be seen that the percentage variation of the district’s total population, rural population and urban population had increased by more than four times, five times and more than two times respectively. The percentage variation of the district’s total population had decreased during 1901-21, increased during 1921-61, decreased during 1961-71, increased during 1971-81 and decreased during 1981-2001. This increasing trend in percentage variations of the district’s population is depicted in Figure – 3.7. The percentage variation of the district’s rural population had increased during 1901-41, decreased during 1941-51, increased during 1951-61 and decreased during 1961-2001. The percentage variation of the district’s urban population had increased during 1901-31, decreased during 1931-41, increased during

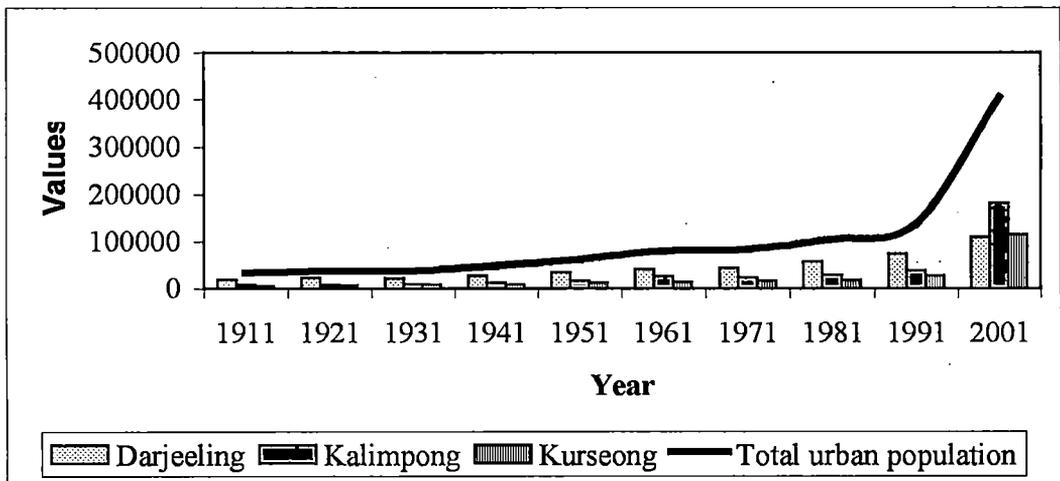
1941-51, decreased during 1951-71, increased during 1971-81 and decreased during 1981-2001. This percentage variation of the district's population is depicted in figure – 3.7.

**Table – 3.10: Growth of Urban Population in Three Hill Subdivisions**

Year	Darjeeling	Kalimpong	Kurseong	Total urban population
1911	19003	7880	5574	32457
1921	22258	8550	6445	37253
1931	21185	8776	7451	37412
1941	27224	11961	8495	47680
1951	33605	16677	11719	62001
1961	40651	25105	13410	79166
1971	42873	23430	16425	82728
1981	57603	28885	18008	104496
1991	73062	38832	26758	138652
2001	108830	182222	114441	405493

Source: Compiled by this scholar from Lama Mahendra P and R L Sarkar (ed.), The Eastern Himalayas-Environment and Economy, Atma Ram & Sons, 1986 and Development Plan for North Bengal (An Approach) Calcutta Metropolitan Planning Org., Development and Planning (T & CP) Department, Govt. of West Bengal

**Figure – 3.8: Growth of Urban Population in Three Hill Subdivisions**



From table – 3.10 it can be seen that during 1911-21 the growth of urban population had increased for Darjeeling subdivision but it decreased during 1921-31. Again it increased during 1931-2001. In Kalimpong subdivision during 1911-61 the growth of urban population had increased but it decreased during 1961-71. Again it

increased during 1971-2001. During 1911-2001 the growth of urban population had increased for Kurseong subdivision.

But urbanization is usually thought to be a consequence of the growth of large-scale industries, expansion of administration, development of transport and communication and growth of trading activity. Hill areas in Darjeeling have not experienced any of the industrial activity. By their very nature the Hill areas are not suitable for the development of large industries. Agriculture is carried on in a scattered manner and agriculture is not productive enough to generate surplus and therefore, large-scale trading activities in agricultural products are not possible. Further, it was the tea industry, which brought urbanization in this area. But there is an all-pervading stagnation in the tea industry.

Darjeeling and Kurseong towns historically developed as the centres for tea plantation. The "centres" do not show any sign of expansion. Kalimpong town was a traditional centre of Indo-Tibetan trade. The traditional trading with Tibet came to a standstill after 1962 (Lama and Sarkar (ed.), 1986).

Therefore this limited urban growth in Darjeeling, Kurseong and Kalimpong may primarily be ascribed to the development of tea gardens and stoppage of Indo-Tibetan trade.

One should note that urbanization in the hills is being characterized by uncontrolled and unplanned haphazard growth, mushrooming of squatter colonies through illegal and forceful occupation of land, inadequate urban facilities, like water supply, sewerage etc. and congested and unhealthy living condition in general (Lama and Sarkar (ed.), 1986).

The population of the urban area of Darjeeling district was subject to considerable seasonal variation. The most favourite summer resort of Eastern India, Darjeeling received large number of visitors in the towns of Darjeeling, Kurseong and Kalimpong. In the Autumn, in the months of September and October a smaller seasonal influx occurs. In the winter many people from the hills went down to the plains. It was difficult to estimate what the summer population was or the time it rose to, as the number of visitors varied from year to year. Trade depressions, military conditions had from time to time checked the flow of summer visitors (Mitra, 1954).

Rural areas fall into two main categories, first, what may be described as the plantation areas, i.e., areas that have been exploited by large capitalist or departmental agencies and, secondly, those worked by the small cultivator controlled by the revenue administration.

### 3.3.3 Marital Status

**Table – 3.11: Marital Status According to Age Groups in Darjeeling District in 1901**

Age Group	Unmarried percentage of		Married percentage of		Widowed percentage of	
	Males to total male population	Females to total female population	Males to total male population	Females to total female population	Males to total male population	Females to total female population
All ages	51.1	45	45.1	44.9	3.7	10
0-10	24.8	27.7	0.1	0.2	0	0
10-15	10.3	9.7	0.4	1.6	0	0
15-20	7.4	4.9	1.8	4.6	0	0.1
20-40	7.8	2.3	27.4	29.1	1.3	2.7
40-50	0.5	0.2	12.4	7.7	1.4	4.2

Source: Banerji, Amiya Kumar, et. al.: West Bengal District Gazetteers – Darjeeling, 1980

**Table – 3.12: Marital Status According to Age Groups in Darjeeling District in 1961**

Age Group	Unmarried percentage of		Married percentage of		Widowed percentage of	
	Males to total male population	Females to total female population	Males to total male population	Females to total female population	Males to total male population	Females to total female population
All ages	57.3	53.8	38.1	38.7	3.7	6.4
0-9	27.7	32.1	-	-	-	-
10-14	11.4	11.7	0.0	0.3	0.0	0.0
15-19	7.9	5.7	0.8	3.3	0.0	0.0
20-39	9.3	3.6	21.8	25.5	0.8	1.0
40-49	0.4	0.2	7.9	5.5	0.7	1.2

Source: Banerji, Amiya Kumar, et. al.: West Bengal District Gazetteers – Darjeeling, 1980

From table – 3.18 and table – 3.19 it can be seen that between 1901 and 1961 there has been a significant upward movement of age at marriage both for males and females. In 1901, 1.8 percent of males used to get married between 15 and 20 years while the corresponding figure in 1961 for the age group 15-19 was only 0.8 percent. 27.4 percent of males were married between 20 and 40 years in 1901 while only 21.8 percent of them were found married in 1961. Similarly, in 1901, 1.6 percent of girls in the 10-15 year age group was to be given in marriage whereas the corresponding figure for 1961 was only 0.3 percent. In 1901, 29.1 percent of the girls in the 20-40 age group was married while in 1961 25.5 percent of the girls of that age group became wives. Though the figures show an upward trend in the marriageable age of both sexes, the age group pattern has remained basically the same. For instance, the practice of getting married in large numbers in the 20-40 age group was there in 1961 as it was in 1901 for both males and females (Banerji, et. al., 1980).

### **3.4 Conclusions**

It is true to say that in the development and distribution of urban settlements the physical configuration of the Darjeeling Himalayas has great influences. It is a region of confused relief featured with hills, ridges, spurs and deep valleys. These physical conditions offer a settlement pattern strikingly different from the rest of West Bengal. The difficult terrain producing an economic condition supported by a land tenure system rather different from the remaining part of the state might have influenced the distribution pattern as well as the nature of settlement of the region (Lama and Sarkar (ed.), 1986). Urbanization is of lower degree in this zone. This may be due to non-availability of land.

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## **CHAPTER IV**

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## CHAPTER IV

### Growth of Population – Key Factors

Development is related to population change in various ways. The transformation in demographic regimes from high to low birth and death rates – the demographic transition – can be added to the list of structural changes constituting development. Population growth, unleashed by sustained mortality decline or by migration, is a force of its own in the development process, sometimes seeming to promote development, more often impeding it, and always diluting its achievements (Dememy and McNicoll, 2003).

The early settlers of Darjeeling were mostly agriculturists. Campbell gave them every encouragement to repossess forestlands and settle down there. Urbanization through the establishment of a sanatorium at the nucleus town also led to growth of employment opportunities and hence to population increase. By 1852, there were 70 European houses in Darjeeling town besides a bazaar and a jail. A Hill Corps was stationed there to maintain law and order (Banerji, et. al., 1980).

Soon, the British established experimental tea plantations; these eventually gave rise to a successful commercial tea industry around 1856. Tea estates developed all around Darjeeling in the second half of the nineteenth century. During this time immigrants flooded in to work in construction sites, tea gardens, and other agriculture related projects. The arrival of Scottish missionaries saw the construction of schools and welfare centres for the British. The Darjeeling Himalayan Railway opened in 1881, facilitating rapid communication between the town and the plains below. Around 1898, Darjeeling assumed a unique political status when a Summer Secretariat of the Bengal Government was built there. In the 1900s, the non-British elites of Kolkata also began visiting Darjeeling. The town continued to grow as a tourist destination and became known as the ‘Queen of the Hills’.

The factors of growth of population in Darjeeling hill areas are as following:

## **4.1 Tea Industry**

### **4.1.1 Introduction**

Tea, as a non-alcoholic beverage, is one of the chief joys of life and no other drink except water is consumed by so many and so much (Manoharan, 1974). Today tea is the reigning beverage in over 45 countries and is consumed in over 115 countries around the globe (Taknet, 2002). Although in terms of total trade value, tea ranks much below coffee.

Economically tea is an extremely valuable source of foreign exchange, including the hard currencies, for a number of developing countries, particularly Ceylon and India. Tea is also an important source of government revenue, being subject to export and excise duties, cesses, and sales taxes in a number of producing and consuming countries. In India as well, its economic position is very important, while it does not cover even one half percent of the total sown area in the country. It is the second leading item of India's export trade and the tea industry provides employment to about a million workers, besides being the mainstay of the plywood industry (Sarkar, 1972).

Owing to the large amount of land and capital investment involved in tea production, it had to be carried out mainly in corporate plantations set up by clearing large areas of jungle-infested lands in tropical countries through foreign capital and initiative. (Sarkar, 1972) Tea was associated with great advantage of commerce and capitalist exploitation typical of the nineteenth century foreign investment in underdeveloped economies (Ghosh, 1987).

### **4.1.2 History**

Tea had its genesis in China and its legendary origin can be traced back to around 2737 BC when tea was ascribed medicinal properties. It was called a "divine healer" by the then Chinese emperor Shen Nung (Subramaniam, 1995). In Chinese Encyclopaedia, 'Pent Sao', the compilation of which goes as far back as 2700 B.C., there are some commentaries on the tea tree. 'She King', one of the classical works by Confucius, contains an elaborate account of tea (Manoharan, 1974). However the first book on tea was Ch'a Ching, or 'Tea Classic' written by Lu Yu in 780 BC

(Baroowah, 2006). The people of China have probably been drinking tea in some form or the other since the fourth century (Subramaniam, 1995). Tea enters Japan in AD 6 and in AD 729 Emperor Shomu served tea to Buddhist monks in Japan. Dengyo Daishi, a monk, brought the first tea seeds from China to Japan in AD 805 (Taknet, 2002).

The Dutch brought the first consignment of tea to Europe in 1610 who got it from the Chinese in exchange for dried sage. They began importing tea thereafter and it was introduced into England around 1645. Tea was first sold publicly in England in 1657. In India, merchants of the East India Company were primarily responsible for the expansion of the trade and planting, which together comprised the tea industry. The Company built factories at Surat in 1608, Madras in 1639, Bombay in 1668 and Calcutta in 1690 (Harler, 1958 and Subramaniam, 1995). The first tea shipment to England by the East India Company took place in 1669 (Taknet, 2002).

From around 1715, the East India Company took complete control of the export trade of tea from China and held it till 1833 (Subramaniam, 1995). During this period of monopoly, tea developed into a popular drink not only in England but in the American colonies too, which were becoming populous and prosperous.

In 1773, a ship in the Boston Harbour in USA was boarded by colonists and the tea thrown overboard as mark of protest against taxation by England. This so called Boston Tea Party led to the Battle of Bunkers Hill, the American Revolution and the declaration of independence in 1774 (Subramaniam, 1995).

It was not until 1780 that the Europeans made efforts to cultivate tea plant in British India but only as an ornamental plant (Subramaniam, 1995). Lieutenant Colonel Robert Kyd, founder and first Superintendent of the Gardens, saw the tea plant sent from Canton and growing in what was then his private garden back in 1780. He had corresponded with Sir Joseph Banks, the authentic English Botanist. Banks took a more activist line by drawing attention to the possibility of tea cultivation in the region now known as the Dooars where “the latitude and the cooling influence of the neighbouring mountains of Bhutan give every reason to expect a climate eminently similar to the parts of China in which good black teas are at present manufactured” (Sarkar, 1984).

According to another source, the East India Company brought a few Chinese plants from Canton to Calcutta in 1793. Some of these were sent by the then Governor General Warren Hastings to Lieutenant Colonel Robert Kyd, who planted these in his private botanical garden at Sibpur, near Calcutta (Subramaniam, 1995).

In 1823, Major Robert Bruce went on a trading expedition to Rangpur (now Sibsagar) and found the native tea trees in nearby hills. Subsequently tea was also discovered in Manipur (Subramaniam, 1995). On Feb 1, 1834 the East India Company took the first of a series of steps aimed at tea cultivation and manufacture on a commercial scale by appointing a committee. The panel reported to Lord William Bentinck, then Governor General, that “the tea shrub is beyond all doubt indigenous in Upper Assam” and that “this discovery is by far the most important and valuable that has ever been made on matters connected with the agricultural or commercial resource of this empire” (Sarkar, 1984). At the time, however, the importance and value of tea for India was less apparent than the fact that Britain had at last found an alternative source from where it could substitute its traditional Chinese imports. Supply of tea from China began through the agency of the East India Company, which later won the sole right to import and enjoyed the same for more than a century as the drink’s popularity grew. The Company’s monopoly ended in 1833, and this clarifies the high priority Bentinck gave to the committee and the necessity that accelerated the pace of its work.

The first experimental plantations were established on the Gabroo Hills in Assam in 1835 (Subramaniam, 1995). The first Tea Garden was started by C. Bruce in 1836 with indigenous tea (Moitra, 1975). In 1838 the first consignment of Indian Tea, consisting of 488 lbs. was sent to London, the price obtained being 9sh. 5d. per lb. By 1854 the Indian export had risen to a quarter of a million pounds, a remarkable success within 16 years (Ghosh, 1933). A company named Bengal Tea Company was created in Calcutta in 1839 and in the same year a joint stock company was also formed in London with similar object, i.e. to purchase the East India Company’s plantations and establishments in Assam for the purpose of carrying on the cultivation there. The two companies almost immediately amalgamated as the Assam Company (Subramaniam, 1995).

In 1841, Dr. A. Campbell, the first Superintendent of Darjeeling, brought Chinese tea seeds from Kumaon and planted them in his garden in Darjeeling town. Commercial cultivation began around 1852-53 (Taknet, 2002). By the end of 1856, tea had been planted in many areas in and around Darjeeling (Subramaniam, 1995). The first public tea auction commenced in 1862 under the auspices of R. Thomas (Moitra, 1975). By 1866, there were already 40 gardens in 10,000 acres with an outturn of half a million pounds. Immigrants poured in and the Cart road was laid out. The journey then took a fortnight was negotiated by boat, palanquin and pony; it cost, in those days, three hundred rupees to travel the 663 km (412 miles) from Calcutta. By 1874, there were 113 tea gardens in Darjeeling district only. Tea cultivation is the great industrial feature of Darjeeling district – conducted almost entirely by means of English capital and under European supervision (Black, Vol. VI). The first Indian owned tea established in 1876. Indian Tea Association formed in 1881 (Taknet, 2002). The tea industry was almost confined to the hills of Darjeeling and the sub-mountain tract of the Dwars (or Dooars) in Jalpaiguri (Black, Vol. XXVI). In 1897 there were 186 gardens, with 55822 acres under tea, employing 32897 persons permanently and 14108 persons temporarily and producing nearly 12 million lb (Black, Vol. XXVII). Over the years the number of gardens has been reduced as a result of the amalgamation of several tea estates (Sarkar and Lama, 1986). With independence, economic base began to change for the better. Plantations Labour Act was passed in 1951. Tea Act was introduced in 1952. The Tea Board of India was set up for the promotion of tea drinking within the country and abroad in 1953.

#### **4.1.3 Tea Plantation**

Tea (*Thea Sinensis* or *Camellia Sinensis*), the most important agricultural product of Darjeeling, is a multistemmed bush growing as high as nine feet (2.75 metres), a broad-leaved, evergreen tree crop. The tea bush yields a perennial crop and flourishes only in areas with well-drained and slightly acidic soils and where there is no extremely cold season (Sarkar, 1972). Practically all the tea is planted either on the flat land in the valleys or on the lowest foothills and only in the Darjeeling district are the estates actually situated in the mountains (Harler, 1958). The greatest extension of the gardens is at about 1250 metres level. Ambhutia and Singell Tea estates near Kurseong are at this level. They are large producers. Below this level tea is inferior,

but above it up to 2000 metres and more the coveted Darjeeling tea is grown, which is known all over the world for its aroma (Bose, 1986). Tea is; however, tolerant of a wide range of warmth such as prevails in the tropical and sub-tropical regions. As the tea shrub is moisture loving, it requires humid air and sufficient rainfall distributed in such a way over the year that continuous water supply is guaranteed throughout the growing season. The tea plant grows to a height of thirty feet, but is generally pruned to three to five feet (Sarkar, 1972).

#### **4.1.4 Tea Economy**

##### **4.1.4.1 Introduction**

Tea industry is not only the mainstay of the hill people of Darjeeling but also the backbone of the hill economy (Lama, 1986). A good number of the tea estates are situated in the two subdivisions, i.e., Darjeeling and Kurseong. The Kalimpong subdivision was almost closed to tea, because the greater part of the sub-division was devoted to forest reserve and agricultural operations by farmers. By 1905, the tea industry became the staple industry of Darjeeling and about one-third of the entire population depended on the tea estates (Sarkar and Lama, 1986).

The tea industry has been of considerable importance in the national economy of India. India remains the world's largest producer, consumer and exporter of tea (Roy, 1968 and Misra, 1986). The top ranking position held by India in production, consumption and export of tea brings with it economic and social returns of corresponding importance in various areas such as GNP, export earnings, revenue resources, employment creation, regional development, growth of human potential, ecological balance – apart from the immeasurable benefit of a familiar drink. The split personality of tea – as both agricultural and industrial enterprise – has given rise to two attitude each tending to act independently of the other (Sarkar, 1984).

##### **4.1.4.2 Production**

In the case of tea, India holds a commanding position in world production. The production of tea in India registered a phenomenal escalation during the past few decades. The production was 255 million kgs. in 1947 (Subramaniam, 1995). Tea production in India in 1982 reached the level of 560.8 million kgs. (Misra, 1986) and

rose to 758.1 million kgs. in 1993. In 1995, India accounts for over 28 percent of the international production (Subramaniam, 1995). Both north and south India shared the increase (Misra, 1986). In its embodiment as agriculture, nevertheless, tea while occupying only 0.2 percent of the cultivated area in the country accounts for 0.9 percent of the net domestic product (Chiranjeevi, 1994).

In 1990s while the domestic demand was growing at an average rate of 4.3 percent per annum, the production is growing only at a rate of 2.5 percent per annum. The total production depends on the total area under the crop and the yield per hectare. Thus, output can be expanded by increasing the area under the crop and/or by increasing the yield per hectare. During 1980-85, while 66 percent of the increase in production is due to increase in yield, the rest is due to area increase. Whereas, throughout 1960-64 the contribution of yield was approximately 80 percent. Therefore we can observe that, there has been a shift in emphasis from yield expansion to area expansion in the supply planning of tea. In fact the average yield, which was increasing at an annual rate of 2.42 percent during 1970-80, has slowed down to a rate of 1.38 percent per annum during 1980-87. Whereas the total area which was growing at a rate of 0.66 percent per annum throughout the earlier period has picked up to a growth rate of 0.97 percent per annum throughout the later period (Chiranjeevi, 1994).

North Bengal tea accounts for about 25 percent of the total tea production in India and Calcutta is the primary market of Assam and North Bengal teas. In 1970s the yield was only 517 kgs. per hectare in Darjeeling area. There is a good demand for Darjeeling tea in world market. The price fetched by Darjeeling tea in London auction is the highest so far (Moitra, 1975). The Darjeeling tea area is essentially a hill district – unique in northeast India comprising a rectangle of some twenty square miles surrounding the hill town of Darjeeling. This rectangle, on the other hand, contains 18,337 hectares of the tea growing land and produces about 10,000 kgs. of tea annually. The most productive police station areas are Poolbazar, Sukia Pokhri, Rangli Rangliot, Darjeeling and Jor Bungalow (Biswas, 1970).

#### **4.1.4.3 Consumption**

The producing countries for domestic consumption retain over 57 percent of tea. In 1990s India's domestic market was already the world's largest and was expanding at the rate of 15 to 20 million kgs. per year (Subramaniam, 1995 and Bhowmik). That is, tea consumption was increased in India between 5 to 6 percent annually, while world consumption grew at 1 to ½ percent in 1980s (Sarkar, 1984).

#### **4.1.4.4 Export & Revenue Earnings**

A tea planter has the following four options to dispose of the output through sale: i) ex-garden, ii) forward contract, iii) Indian auctions, and iv) London auctions. Tea auctions were started in London in 1839, Calcutta in 1861, Colombo in 1863 and Cochin in 1947. The largest auction centre in the world is Colombo. Tea processed in factories is auctioned in Calcutta, Siliguri, Cochin, Coimbatore, Coonoor, Guwahati and Amritsar (Chiranjeevi, 1994 and Subramaniam, 1995). The tea industry suffers violent price fluctuations in 1866, 1879, 1896-1904, 1920, 1928-33, 1951-52 and 1955 (Roy, 1968).

The value of tea exports was over Rs. 160 crores annually, on an average in 1970s. Although the internal market is a great advantage for India, India's export market is 'more' vital to earn foreign exchange for our developing economy. Tea earnings of foreign exchange account for 10 percent of total foreign exchange earned by India (Moitra, 1975). For many years now India has been the largest single producer and exporter of tea in the world (Chiranjeevi, 1994).

The Darjeeling tea for its distinguishing flavour plays a role of paramount importance in the Indian export market. Darjeeling produces approximately 11 million kgs. Its contribution to the overall tea production in India is just over 2 percent, but it exports 85 percent of its total production at a value, which exceeds the average realization from Assam or other tea growing areas in India, and amounts to about Rs. 24 crores, or 4.3 percent in total foreign exchange (Sarkar and Lama, 1986).

Tea, being a commodity which is subject to direct taxation by way of excise duty, export duty, a cess under the Tea Act, – this industry makes considerable

contribution to Central revenues. This industry is also subject to Central Income Tax, Corporation Tax and in most of the tea growing States, to Agricultural Income Tax (Misra, 1986).

Tea contributes Rs. 1000 crore annually on an average to the GNP. Export earnings for 1983, an excellent year for prices, are estimated at over Rs. 520 crore. Tea exports constitute about 6 percent of the country's total earnings – the largest share of any single item. In terms of taxation, tea accounts for revenue of about Rs. 100 crore credited to the central as well as State governments (Sarkar, 1984).

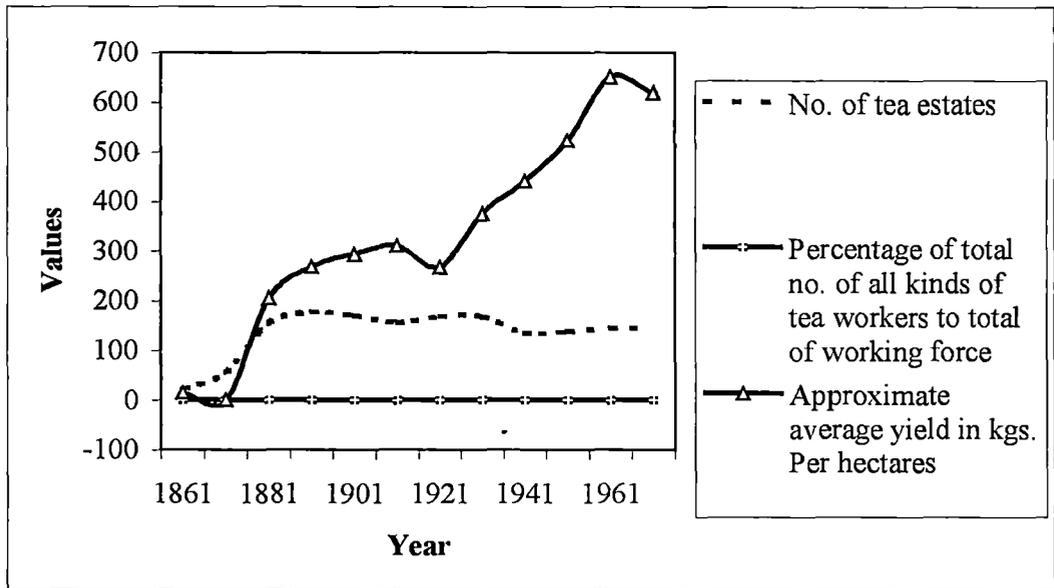
#### 4.1.4.5 Employment

**Table – 4.1: Tea Industry's Impact on Population Growth in Darjeeling District:  
1861-1964**

Year	No. of tea estates	Total area in hectares under tea	Approximate yield in kilograms	Average yield in kgs. Per hectares (col. 4/col. 3)	Approximate average yield in kgs. Per hectares	Total No. of all kinds of tea workers	Total of working force	Percentage of col. 7 to col. 8
1	2	3	4	5	6	7	8	9
1861	22	1317	19323	14.671982	15	2534	-	-
1871	56	-	-	-	-	8000	94712	8.45%
1881	155	11489	2340719	203.73566	204	-	155179	-
1891	177	18462	4948997	268.063969	268	-	155207	-
1901	170	20948	6139720	293.093374	293	40451	155235	26.06%
1911	156	20853	6464079	309.983168	310	39561	151604	26.09%
1921	168	23897	6387117	267.276939	267	48710	174167	27.97%
1931	169	24777	9297204	375.235259	375	63665	129070	49.33%
1941	136	25585	11256182	439.952394	440	69699	133306	52.28%
1951	138	25345	13282995	524.087394	524	69590	137541	50.60%
1961	145	27709	18050271	651.422679	651	59844	266105	22.49%
1964	144	28121	17398000	618.683546	619	-	-	-

Source: Banerji, Amiya Kumar, et. al.: West Bengal District Gazetteers – Darjeeling, 1980.

**Figure – 4.1: Tea Industry’s Impact on Population Growth in Darjeeling District**



Apart from tourism the biggest industrial activity and that offering the largest employment in the hills is tea. Among the various factors of production, worker is very important in the agro-based industry (Sharma, 1999). And the most potent factor contributing to the growth of population had been the tea industry in the district of Darjeeling. The establishment of the first tea plantations on a commercial basis in 1856 at Aloorbari and at Lebong created a great demand for plantation labour in the district. From around this time, immigration of plantation labourer caused by the opening of tea gardens has been a major factor in the population increase of the district. Tea industry’s impact on population growth in Darjeeling district has been shown in table – 4.1 and in figure – 4.1. In 1869, when a rough census of the then district was taken, it was found to contain over 22000 inhabitants. The great part played by the tea industry in this behalf is apparent from the fact that according to the census of 1901 tea-garden labourers and their dependants accounted for more than two-thirds of the total population of the district, in spite of the fact that tea industry was passing through a inconsequential depression at that time (Banerji, et. al., 1980). That is, tea growing and tea manufacturing employed, according to the census of 1901, 64000 workers (Sarkar and Lama, 1986). In 1931, the similar category of labourers formed about 47.25 percent of the total working population of the district. In the three hill subdivisions in 1971 tea garden workers formed 31.52 percent of the total working population (Banerji, et. al., 1980).

The tea industry is extremely labour intensive industry. More than a million workers in India are directly employed in the tea plantations and manufacturing industries at the present time. In addition, a large number of people find employment in a range of supplementary industries associated with tea plantations – for example, among others, ply-wood, tea chests, aluminium foil, metal fittings, fertilizers, insecticides, transport, warehousing and business and trade related with the industry. Directly or indirectly, this industry provides employment to about eighteen lakhs of people (Misra, 1986).

The British advocated the employment of families rather than individuals in the tea gardens, therefore absorbing women and children in their labour force since a variety of everyday jobs in the procedure of tea production can be carried out by them. Moreover, in view of the fact that plantations are located in remote regions, it is more advantageous to have families in residence. The workers in the tea plantations of Darjeeling district were predominantly Nepalese who came as indentured labour. Therefore, unlike Assam where recruitment was a problem since labour was brought from distant places, Darjeeling from the very beginning had an abundance of cheap labour. A good number of the gardens in the Terai and Darjeeling region were successfully able to constitute a permanent and settled labour force, much earlier than Assam since the economic pressure in Nepal brought Nepalese in large numbers to Bengal. Recruitment in British days was done primarily through contractors most of whom employed arbitrary and underhand methods. In 1892 a Tea District Labour Association was formed to undertake recruiting. This act encouraged recruitment of garden sardars (head worker of a garden). This was an arrangement whereby a worker was given the task of bringing people from his own village and was paid a commission. This system was later abolished and in 1933 the Tea District Emigrant Labour Act came into force, subjecting all recruitment to official review (Dasgupta and Vij, 1986).

From 1947 there has been a steady decline in the labour force in tea plantations all over India. The average daily employment cut down from 10.18 lakhs in 1951 to 8.19 lakhs in 1964. This was to some extent due to the change in management and agricultural practices. The system of weeding, shade regulation, transportation of leaf, and withering methods has improved due to increased

mechanization, which has resulted in the retrenchment of labour. The natural growth of the resident labour force has also operated to reduce the labour turnover. Coupled with this has been the increasing instance of low productivity and growing sickness of gardens, which has compelled the management to periodically lay off a significant number of workers (Dasgupta and Vij, 1986).

Today there are 87 registered tea gardens producing tea and the area on which this produced is 17500 hectares. Among them 11 are organic tea gardens and 2 are sick tea gardens. The total production ranges from 10 to 11 million kg annually. The industry provides employment directly and indirectly to about 50 percent of the population. 60 percent of the directly employed are women. The employment is on a family basis. In most of the gardens it is the third or fourth generation of workers who are employed. 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.

The tea plantation workers are mainly the immigrants or the descendents of migrants from various parts of the country and even from the neighbouring countries. The indigenous people of Assam, Bengal and South India did not accept the works in the plantations due to low wage and isolation from the mainstream of national life (Sharma, 1999). For that migrant labour was recruited for the plantations and the planters ensured that they worked only on the plantation at the low wages offered (Bhowmik). The history of their migration is in general dates back to early eighteenth century. The tea garden workers in Assam and Dooars are mainly the tribals from Bihar, Orissa and Madhya Pradesh while the entire work force of Darjeeling hills are exclusively of Nepalese origin (Sharma, 1999).

The socio-economic life of the tea plantation workers numbering about eleven lakhs can be understood from the nature of the provisions of various labour acts related to the plantation workers today. The eleven lakhs tea garden workers constitute one-seventh of the seventy lakhs total workers of the country. The plantation workers are most exploited section of workers in the organized sector of the country. The literacy level of the workers is very low. The characteristic features of the garden workers are heterogeneous social composition cut across by caste and

ethnic background. For all practical purposes, the low wage, coercion and indenture are the nature of recruitment, administration and work organization in tea plantations in the country. Seasonal employment and perennial unemployment is a big problem in the tea gardens of Darjeeling. However, since 1947 with the emergence of trade union movement in the plantations, the system of collective bargaining have been given little relief to the workers today (Sharma, 1999).

Women constitute the bulk of the labour force in tea gardens, given their skill in plucking the leaves from the tea bush (Taknet, 2002). It is also to be noted that tea industry employs more women than any other organized industry, mainly because plantation work is only an exceptional kind of agricultural work, which is familiar to women, the vast majority of whom live in the rural districts (Misra, 1986). Half of the plantation workers are females who do not at all get to time become conscious of their justice due to their dual responsibility as plantation workers and housewives (Sharma, 1999).

#### **4.1.5 Support to Other Ancillary Industries**

##### **4.1.5.1 Plywood and Fertilizer Industry**

The tea industry influences growth of many industries. The plywood industry owes its origin to the development of the tea industry. The first plywood industry in India was started in 1918. A large number of industries were developed in Assam and West Bengal, predominantly in the surrounding area of Calcutta. Most of the fertilizers used in tea industry are of Indian manufacture. In the nature of things, a large industry like this is itself a substantial consumer of supplies manufactured and services rendered by other industries (Misra, 1986).

##### **4.1.5.2 Development in Infrastructure**

The tea industry has provided a stimulus to the development of means of communications and transportation and forestry. This industry situated in areas inaccessible from the important centres of trade, figures prominently in the earnings of transport organizations like railways and the river steamship companies and even in the earnings of air transport. Most of the roads in the areas producing tea have been constructed by the authorities of the tea gardens. It may also be noted that the

Darjeeling Himalayan Railway service between Siliguri and Darjeeling connecting the plains and the hills were originally started for sending essential supplies like coal, fertilizer, machinery, building materials from Calcutta to Darjeeling via Siliguri and for sending regular supply of tea from the Darjeeling gardens to the Calcutta market. In this way, it contributes to the welfare and infrastructure of roads, transport and warehousing facilities. This industry has also provided a stimulus to the development of forestry and opening up and development of areas, which were previously inaccessible jungles. It also prevented erosion or other problems very much unlike the cultivation of many other crops (Misra, 1986).

In fine, it should be stated that plantation is an instrument of modernization in the sense that it served to open up previously backward regions and helped to create a social overhead capital and transform primitive economies into money economies. Most of the areas around the plantations in India have now a day developed into well-developed localities providing all necessary amenities to the residents of those areas. For an example, a large number of schools and colleges, hospitals, clubs and shops are established, which helped the development of industrial localities and towns in the Darjeeling district of West Bengal. In this way, this industry has risen considerable influence on the economic life of the Indian people, particularly, remarkable on the States of Assam and West Bengal, which have the largest number of tea plantations and factories. It is, therefore, reasonable to conclude that this industry still holds a considerable potential for economic development of the country as the largest organized sector providing a stable economic base (Misra, 1986).

#### **4.1.6 Ecology**

Apart from promoting balanced regional development, the tea industry also helps in maintaining an ecological balance. A small number of industries in fact provide a better example of sound environmental management than tea. Tea bushes do not damage nature's own protective system in that they hold together the soil firm, nor do they despoil natural beauty. They preserve the fertility of the soil better than many other crops. They provide an economic resource created by climatic and soil conditions, which would have supplied little sustenance otherwise. Tea gardens do not pollute air or water. There is merely a little smoke coming out of the factory to mar

the effect of a fundamentally agricultural enterprise in total harmony with nature (Sarkar, 1984). The savage deforestation of recent years has contributed to significant changes in climate, which plays a crucial role in tea cultivation.

#### **4.1.7 Conclusions**

Historically, Darjeeling did not develop without tea industry. In future as well it cannot develop without it (Sarkar and Lama, 1986). The tea industry is passing through great difficulty. The number one problem of the industry is that the consumption of tea is not increasing as fast as the production. Because of this, 'over supply' takes place (Moitra, 1975). As a result, price of tea is declining and so the profitability.

### **4.2 Tourism**

#### **4.2.1 Introduction**

Tourism is one of the valuable attributes to a good number of developing nations, of economic growth, which can act as the pivot of vehicle for economic development. A massive and growing torrent of investment continues to pour in its development. The flow of money generated by tourists' expenditure finds its ways into the overall economy through the effect of multiplier. Tourism has earned considerable recognition as an activity, generating a number of social and economic benefits like promotion of national integration and international understanding, creation of employment opportunities, removal of regional imbalances, augmentation of foreign exchange earnings, etc (Kumar, 1996). Tourism in the mountains is essentially encouraged for economic reasons, as it promises cash-flows into remote mountain regions having little economic opportunity, generates local employment, holds back the procedure of depopulation in the marginal areas and finally corrects regional imbalance (Singh, et. al., 1992).

## **4.2.2 Tourism in Darjeeling**

### **4.2.2.1 Pre-Independence Perspective**

The mean temperature of Darjeeling is about 24° below that of Calcutta and only 2° above that of London (Black, Vol. VI). And Darjeeling was the summer headquarters of the Governor. Because of this additional administrative function, its dimension of growth and development widened, and the town assumed a distinct urban character, tempting Indian bourgeois and elite to imitate Western style of living, who, in actual fact, had already begun spending their summers in frolic and fun, recreation and revelry for longer period on this hill station (Rawat, 1993).

### **4.2.2.2 Post-Independence Perspective**

Resorts' tourist curves abruptly took off in the post independence period (after 1947) when tourism began to be promoted in the public sector. The development of tourism was seen as a panacea for many economic ills, specially the development of backward regions, like the Himalayas (Rawat, 1993). Being a great summer resort from the heat of the plains, the number of population fluctuates according to the seasons of the year in Darjeeling (Black, Vol. VI). It was observed that 107188 no. of tourists visited Darjeeling during season time of 1972. About 63 percent of the tourist visited Darjeeling during summer (March–June) season and 37 percent visited during autumn (September–15 November) of the total tourists, about 50 percent visited Darjeeling during the 'peak' period, i.e., May and October (Development and Planning (T & CP) Department).

### **4.2.2.3 Foreign Tourists**

Entry of foreign tourists into the Darjeeling Hill Areas was closed following the Indo-China war in 1962. This resulted in a decline in tourism activities in this area. Consequently, infrastructure development suffered. This restriction was lifted in 1985 and the number of tourists, particularly the foreign tourists visiting Darjeeling increased markedly (Mashqura and Lepcha, 2004).

#### 4.2.2.4 Economy

Tourism can be the largest source of income for developing nations. If properly conducted on a large scale, tourism has the potential to give a boost to the economy and quite possibly be the main thrust behind its development. In India, tourism is already second behind the gem and jewellery business in terms of foreign exchange earnings. However, because tourism's foreign exchange expenditures are quite small in comparison to the expenditures in the jewellery industry, tourism is actually the largest net foreign exchange earner (Bala, 1990).

Tourism is an important economic activity in this mountain area generating incomes and employment for the local population. The tourists every year spend to the tune of rupees seventy crores. Apart from an increase in the income and the demand for local products in this area, tourism in addition 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 among different sectors of the economy, the consequence 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 (Mashqura and Lepcha, 2004). Local workers, once dependant on subsistence farming, are now become entrepreneurs and businessmen, hiring guides and renting supplies to the tourists who come to the mountains. Even the young and the old can contribute to the local economy by weaving souvenirs, such as baskets and clothes, which are eagerly bought by most tourists.

Tourism can also brought a spread to the degree of rural infrastructure in India. Besides the commerce that is brought in through the building of roads, many countrysides have to some degree been linked to the main towns through sewage systems, telephones, electricity, and other tourist related infrastructure.

From 1980 to 1987 the number of tourists visiting India increased from 800,000 to 1.1 million. In 1993, 1.8 million tourists came to India, and spent Rs. 39.89 billion (US\$ 1.8 billion). Foreign exchange earning for the 1993-94 fiscal year grew by approximately 14 percent (Kottary, 1994). These statistics have positive implications for the national economy, in monetary terms. However, India cannot facilitate this demand with only 798 hotels and 47,400 rooms. The government has not the means to neither accommodate nor regulate the activities of these large numbers of visitors.

### **4.2.3 Conclusions**

Tourism is widely recognized as the world's largest industry. Yet tourism is also highly dynamic and is strongly influenced by economic, political, social, environmental and technological change (Sharma, 2005). The process of tourism incorporates man, space and time as its principal components (Kamra, 2001).

## **4.3 Agriculture**

### **4.3.1 Introduction**

Previously the Lepchas followed the nomadic form of tillage known as Jhum cultivation. This consisted in selecting a spot of virgin soil, clearing it of forest and jungle by burning, and scraping the surface with the rudest agricultural implements. The productive power of the land became exhausted in a few years, when the clearing was abandoned, a new site was chosen, and the same operations were carried on de novo. The Meches were also inhabited the deadly jungle with impunity and cultivated cotton, rice and other ordinary crops by the jhum process described above (Black, Vol. VI).

But in the colonial period the area east of Teesta was made an agricultural area, while the land west of it was covered with tea gardens (Subba, 1985). In the Kalimpong subdivision land was withheld from development under tea, Government's policy being to reserve that area for forest and ordinary cultivation (Mitra, 1954). Such a clear demarcation in the economy of the district was probably due to many reasons such as the late annexation of Kalimpong Subdivision, nature of land itself which is not very steep in Kalimpong as found in Darjeeling and the

climatic conditions which are more suitable for cultivation in Kalimpong than in land west of Teesta river (Subba, 1985).

### **4.3.2 Different Crops**

#### **4.3.2.1 Cinchona**

The original home of cinchona was in the northwestern part of South America, chiefly Bolivia and Peru (Mitra, 1954). Inca tribes of South America were well acquainted with the plants, which were taken to Spain in 1532 by the Spanish Vicerine of Peru (Sharma, 1994). The antipyretic properties of its bark were probably known to the Jesuit missionaries in those countries but its introduction into Europe in 1639 is ascribed to the Countess of Chinchon, wife of the Spanish Viceroy of Peru. Quinine, the essential principle of cinchona, was isolated in France in 1820 and the indiscriminate exploitation of the South American forests which followed led to the fear, later justified, of an early exhaustion of the natural sources of supply. Attempts were accordingly made to organize the cultivation of cinchona as the only means of ensuring continuity of supplies (Mitra, 1954).

Later in the beginning of the eighteenth century, the plant was grown in Indonesia, New Zealand, France, Indo – China, Malaya, Australia, East Africa, Central America, Korea, Russia and India. However, cinchona plantations were mainly introduced and expanded in India and Indonesia successfully due to their suitable climate and availability of cheap labour force (Sharma, 1994).

In Bengal the cultivation of this exotic species was entrusted to Dr. Anderson, then Superintendent of the Royal Botanic Garden, Calcutta, to whose labours, technical ability and judgment the success of the present plantations is largely due. The first nurseries were tried at Senchal where, however, the climate proved too rigorous and the plants had to be transferred to a milder climate at Lebong. There they thrived and a suitable location for a permanent plantation was found at Rungbee on a spur projecting from Senchal in a southeasterly direction. The plantation at Rungbee was gradually extended on the whole range lying between the Rungbee (or Rongjo) and the Riyang valleys (Mitra, 1954). Cinchona cultivation was introduced by the government in 1862 (Black, Vol. XXVII). In 1874, a Quinine factory was established at Mungpoo (Sharma, 1994). In 1883 a plantation of 300 acres was started in the

Rangiang valley but the rainfall proved too heavy and the plantation was abandoned in 1896. The Rungbee and Sittong ridges constituting the Mungpoo plantation had a total area of 12,000 acres and a standing crop of 4000 acres (Mitra, 1954). Cinchona characterized the Kalimpong sub-division in two distinct pockets at Munsong and Mungpoo. The former is situated about 10 miles northeast of Kalimpong that comprises Munsong, Kashyem, Burmiak and Sangser, the later which is about 12 miles southeast of Darjeeling is composed of the Mungpoo Sittang divisions. These two areas jointly comprise an area of about 3142 hectares.

In 1896-97 the number of plants in the government plantation was nearly 2½ millions, the amount of dry bark produced was 318715 lb. including bark bought from private plantations, the out – turn of the government factory was 10149 lb. of sulphate of quinine, and 4075 lb. of cinchona febrifuge, the gross receipts were Rs. 176798 and the net profits Rs. 9767. The three forest divisions of Darjeeling yielded in that year gross revenue of Rs. 136058. Three breweries had an out - turn of 80000 gallons (Black, Vol. XXVII). At Mungpoo the Government Cinchona Plantation is situated. It also produces Tung oil and ipecac (Bose, 1968).

Nowhere in the administrative reports of Darjeeling district Gazetteers or travellers' reports, any mention of the migration pattern of the Nepalese in cinchona plantations of Darjeeling hills, is mentioned. The areas were developing at a very fast pace especially due to the colonial policy of British Government. The introduction of cinchona plantation of Mungpoo mainly attracted a few people of eastern Nepal and Sikkim and they migrated to the plantation in search of jobs. They were mainly the immigrants from eastern Nepal due to their poverty and exploitation during the Rana regime. The cinchona Plantation workers had peasant background of Nepal and Sikkim. Rest of the working population was enticed from the local people. In Rongo Medicinal Plantation, the workers were mostly consisting of the immigrants from Burma. The migration into the Cinchona plantation was family based and thus their socio-economic life was shaped and moulded by the plantation system. In 1990s the total population of the workers was 6354. Among the plantation workers, there were 586 (47.6%) males, 284 females (23.1%) and 302 (24.5%) child workers. It was interestingly noted that 57.6 percent of the plantation workers were either women or child workers (Sharma, 1994).

Like any other organized industry, cinchona plantation also occupies a unique position due to its agro-industrial features.

#### **4.3.2.2 Cardamom**

Cardamoms, which are raised both as a secondary crop in the tea and cinchona plantations and separately in small estates are confined to the extreme northwest in the Darjeeling district and cover a total area of about 2287 hectares (Biswas, 1986). Its suitable production altitude is between 1000' to 5000' above the sea level. The production system of cardamom however, does not require annual sowing but some field works are needed. The suitable harvest period is September-October (Development and Planning (T & CP) Department).

Cardamom is produced annually valued from Rs. 1.5 crores to Rs. 1.18 crores (at the local wholesale price). The wholesale price per mound while the goods reach Siliguri rise upto Rs. 750.00 from the local prices of Rs. 445.00 to Rs. 500.00 per mound. Thus one acre of cardamom garden would produce about 6 mound of cardamom which would fetch about Rs. 2.5 thousand to Rs. 3 thousand (gross) or Rs. 1.3 thousand to Rs. 1.8 thousand (net) to the farmers (Development and Planning (T & CP) Department).

#### **4.3.2.3 Other Crops**

Forests give much good timber (Bose, 1968). India rubber of excellent quality was obtained from these forests (Black, Vol. VI). The other agricultural products consist of rice, corn (maize) and wheat in the hills.

#### **4.3.3 Role of Agriculture in Growth of Population**

Any emphasis on the tea industry as the most potent factor for growth of population in the district should not minimize the role-played by general agriculture. The following table prepared from the data relating to agriculturists in the respective censuses, gives an account of generation variations, agricultural workers in the district and their percentage to the total working force of the district (Banerji, et. al., 1980). Table – 4.2 shows the percentage of agriculturists to total workers in the district of

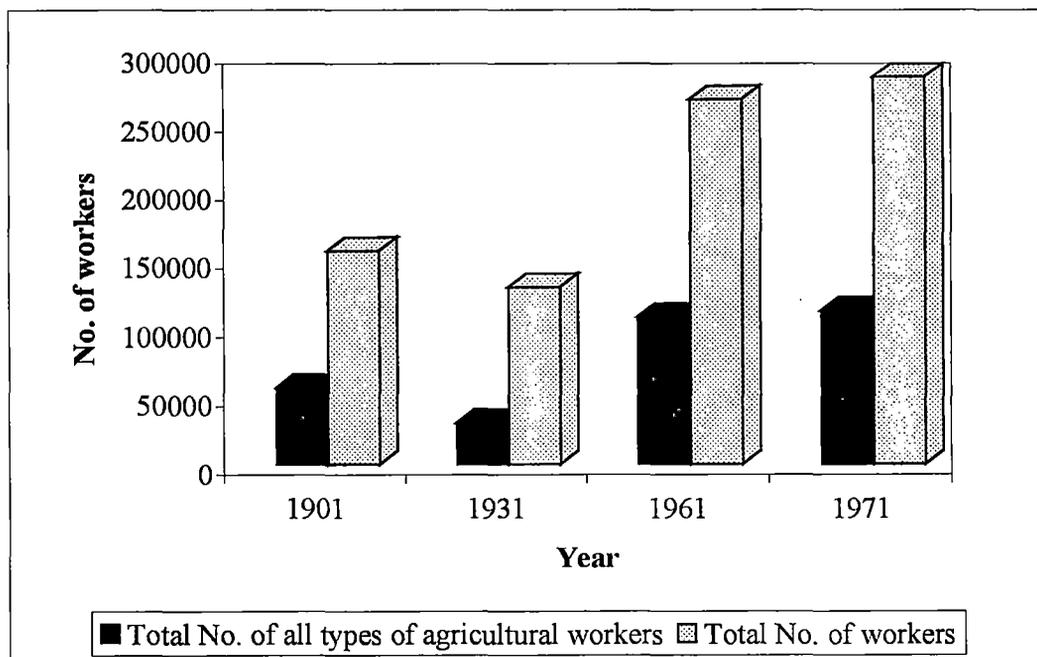
Darjeeling. From this table it can be seen that the total number of all types of agricultural workers has been increased more than double during 1901-1971. But the percentage of agriculturists to total working force has been increased only nearly 4 percent. Agriculturists to total workers in Darjeeling district are depicted in figure – 4.2.

**Table – 4.2: Percentage of Agriculturists to Total Workers in Darjeeling District: 1901-1971**

Year	Total No. of all types of agricultural workers	Total No. of workers	Percentage of agriculturists to total working force (col. 2/col. 3%)
1	2	3	4
1901	56029	155207	36.10%
1931	30175	129070	23.38%
1961	107510	266105	40.40%
1971	111837	282442	39.59%

Source: Banerji, Amiya Kumar, et. al.: West Bengal District Gazetteers – Darjeeling, 1980.

**Figure – 4.2: Agriculturists to Total Workers in Darjeeling District: 1901-1971**



All the Nepalese immigrants could not obviously be absorbed in the tea plantations because, while the immigration of these people continued, the tea plantation area could not be extended indefinitely due to various ecological and other constraints. Those who could not be absorbed in the tea plantations embraced agriculture by and large, though many among them were engaged in the trans-Himalayan trade between Tibet and the East India Company (Subba, 1985).

#### **4.3.4 Conclusions**

In the hill areas of Darjeeling the economy has been gradually shifting from self-consumption to the market based, thereby enhancing the importance of the market and the businessmen in local economic activities. Even in the remote villages without proper communication facilities, the cultivation of cash crops like ginger is expanding steadily. This is inevitable in a place where the economy is totally monetized and the need for cash is growing (Subba, 1985).

### **4.4 Migration**

#### **4.4.1 Introduction**

A sensitive barometer of changes in the social and economic fields, migration is one of the three basic factors of population change, the two others being fertility and mortality. Migration between one area and another within the same country as also between one country and another can be traced back to the century left behind, if not to an earlier period. In India, migration of both the varieties is distinctly traceable back to the nineteenth century (Chattopadhyaya, 1987).

Migration is an area of study which permits multi disciplinary approach in social sciences, including as it does, social demography, sociology, social and cultural anthropology, economics, history, geography and psychology (Rao, 1986). The word migration denotes movement of population with the change of residence. The change of residence may occur from one village or town to another village or town, or from town to village, within the district or commune, or between the district or commune, within the country, or outside the country, during last one month, two months, three months, or more.

It is realized that migration is primarily motivated by search for occupational opportunity and that its volume and direction are primarily influenced by job opportunities (Khan, 1983). Thus the history of migration is a history of succession of labour reservoirs (Bolaria, 1997).

Migration is an outcome of economic and political change. Economic growth creates disparities in wealth among countries and among areas within countries. These disparities stimulate movement from places of limited opportunities to those areas with higher levels of opportunity. It is very clear that the vast majority of migrants, both international and internal benefit economically from their moves (Walter, 2002). To a certain extent migration of people from one to other area could be important instrument for achieving economic development. It is with the context that the migration shifts the human resources from the areas where their social marginal products are assumed to be zero or negligible to the place where their marginal products grow rapidly as result of capital accumulation and technological progress. At the same time, the migration is thought to be important process for meeting required kind of manpower demands in different areas and locations. As Todaro describes, the migration of workers could be viewed as socially and economically beneficial process because the workers get shifted from low productivity and labour shortage areas. Baque argues that the 'push and pull factors' at the origin influence migration of people. He cited that migration generally takes place when the positive pull factor at the place of destination is outnumbered by negative push factor at the place of origin. Myrdal considers only push factors as a potent reason of migration while Trewartha, Sovani and Bas explained, the migration accrues due to the complex interactions of push and pull factors at the place of origin. Migration is also motivated by factors like geographical and locational conditions of the residence of migrants (Mehta, 1991). As part of population studies, migration has a strong empirical orientation. There is still a marked preoccupation with measurement and the provision of basic data to the possible detriment of the development of theory. Nevertheless, migration is an integral part of development and has been given considerable attention in the development literature. Everett Lee's attempt was essentially a descriptive model of migration incorporating a series of 'pushes' from areas of origin and 'pulls' to areas of destination. The pushes and pulls leading to migration were generally seem to be created by two main forces i.e., population growth in the rural sector that brought a

Malthusian pressure on agricultural resources and pushed people out, and economic conditions generated mainly by external forces that drew people into cities (Skeldon, 1997).

The importance of migration for developing countries cannot be overestimated. Migration is a major factor in economic development and manpower planning. It has acquired special significance in the context of commercialisation of agriculture because of labour mobility. It is a major factor in urbanization and social change. It is necessary to consider migration and settlement as interrelated aspects of social and cultural life of the people. Migration is a shift in the place of residence for some length of time. While it excludes short visits and tours, it includes different types of both voluntary and involuntary movements (Rao, 1986). There are other situations of migration where movement is part of people's earning a livelihood. These are nomads, shifting cultivators, itinerant traders and salesmen, artisans and Labourers.

The migration process can be understood in terms of social relations and obviously be considered as the resultant of human social relations. Thereby, before doing any thorough discussion on migration, it is necessary to envisage the population structure i.e. population size and its growth, and other demographic characteristics including socio-cultural, socio-economic and migration characteristics of the people inhabiting in the concerned region (Datta, 2003).

Early Census Reports distinguished between five different types of migration – casual, temporary, periodic, semi-permanent and permanent (Chattopadhyaya, 1987).

#### **4.4.2 Migration in Darjeeling**

A town will have net immigration of population from other areas during a particular period if its natural rate of population growth (birth rate-death rate) over the same period is less than the census growth rate. If, on the other hand, the natural increase rate of that place is more than the census growth rate, it would have net out migration of population to other areas (Premi, 1980).

Immigration (for various reasons) has been the largest single factor in the growth of population in the district of Darjeeling. But emigration from the district has always been relatively negligible. Moreover, the emigrees, more often than not, have left the district only temporarily. Table – 4.3 below gives figures of immigration into and emigration from the district from 1891 to 1961.

**Table – 4.3: Immigration and Emigration: 1891-1961**

Year	Actual Population	Immigration	Emigration	Natural Population
1891	223314	119670	962	104606
1901	249117	113588	802	136331
1911	265550	111269	6000	160281
1921	282748	101807	6000	186941
1931	319635	100700	3455	222390
1941	376369	95750	4120	284739
1951	445260	100311	6900	351849
1961	624640	169250	N. A.	455390

Source: Banerji, Amiya Kumar, et. al.: West Bengal District Gazetteers – Darjeeling, 1980.

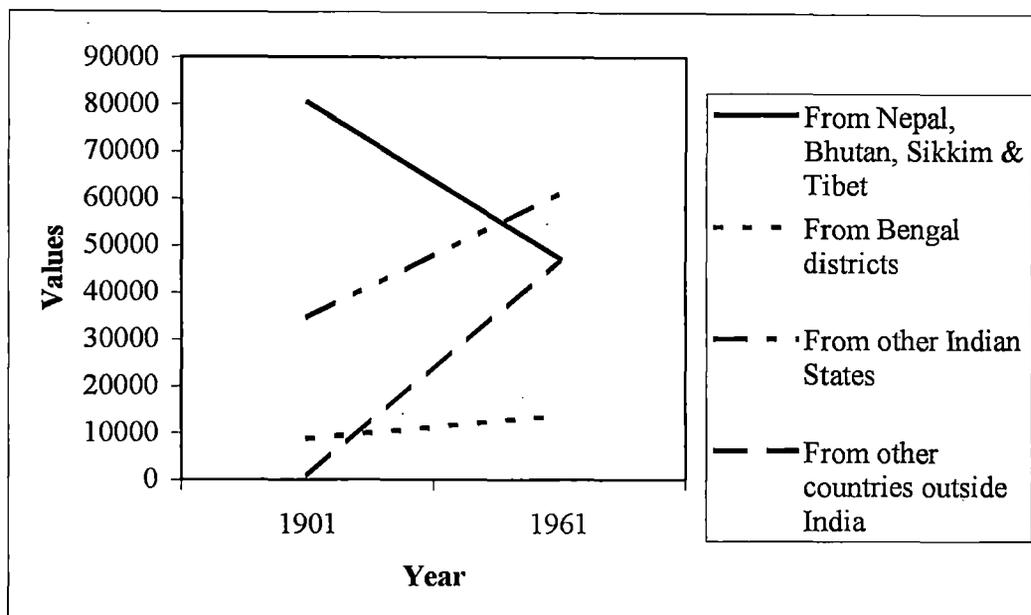
The following table – 4.4 gives information about the places from which immigration took place into the district in 1901 and 1961. Trend of immigration into Darjeeling district during the year 1901-1961 is depicted in figure – 4.3.

**Table – 4.4: Places of Origin of Immigration into Darjeeling District: 1901 and 1961**

Year	From Nepal, Bhutan, Sikkim & Tibet	From Bengal districts	From other Indian States	From other countries outside India
1901	80303	8725	34549	814
1961	47270	13720	61226	47034

Source: Banerji, Amiya Kumar, et. al.: West Bengal District Gazetteers – Darjeeling, 1980.

**Figure – 4.3: Trend of Immigration into Darjeeling District**



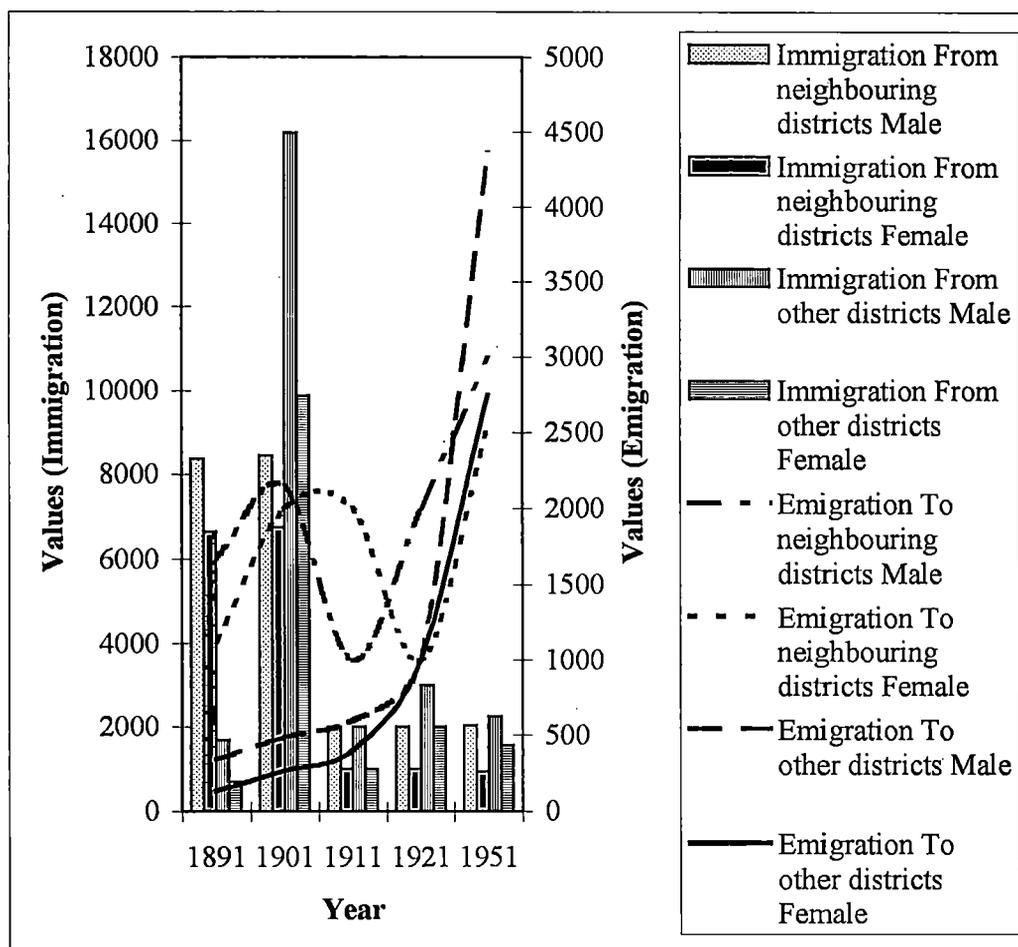
Data about movement of population between Darjeeling and neighbouring or other districts of Bengal from 1891 to 1951 has been furnished in table – 4.5 and in figure – 4.4.

**Table – 4.5: Migration between Darjeeling and Other Districts of Bengal/West Bengal: 1891-1951**

Year	Immigration				Emigration			
	From neighbouring districts		From other districts		To neighbouring districts		To other districts	
	Male	Female	Male	Female	Male	Female	Male	Female
1891	8368	6640	1688	691	1674	1124	338	131
1901	8455	6757	16172	9872	2147	1995	486	264
1911	2000	1000	2000	1000	1000	2000	600	400
1921	2000	1000	3000	2000	2000	1000	1000	1000
1951	2032	935	2256	1565	2990	2547	4361	2747

Source: Banerji, Amiya Kumar, et. al.: West Bengal District Gazetteers – Darjeeling, 1980.

**Figure – 4.4: Migration between Darjeeling and Other Districts of Bengal/West Bengal**



#### 4.4.3 Immigration in Darjeeling

In some districts like Jalpaiguri, Darjeeling and Dinajpur, there were wastelands available for cultivation. The population of Kalimpong and the adjoining localities east of the Teesta River was annually augmented by immigrants from Nepal. There was a 'constant' influx of labourers from Nepal for employment in the tea gardens of Darjeeling. The report for 1879-80 also speaks of the immigration into Darjeeling of a fair number of Chinese carpenters from Calcutta. Migration from Nepal to take up land for cultivation in Kalimpong continued in 1879-80, and in 1875-76. (Chattopadhyaya, 1987). A Treaty of Peace and Friendship has been signed with Nepal in 1950 which gave Nepal unrestricted access for commercial transit

through India, and secured Nepal's total sovereignty while making both countries responsible for each other's security (Chandra, et. al., 2002).

In fact, the district is much known for its tea production along with oranges, cardamom, gingers, vegetables, potato, and also timber and milk, and is deficient in cereals, pulses, oilseeds, salt, fertilizers etc. This encouraged immigration in Darjeeling district. Tourism, as an element of land resource of this district is the most lucrative and viable industry. Demography views tourism as a form of temporary migration (Jafari, 2000). The occupational structure in the district is based on agriculture. Except for tea and timber, there is practically no other major industry in the areas (Datta, 2003).

#### **4.4.3.1 Influence of the Tea Gardens**

The phenomenal growth of the population since 1872 is due to two main causes, the development of the tea industry and the influx of settlers to exploit the wastelands of the district. To this rapidly increasing demand the local supply of labour was quite unequal; the result was an unexampled immigration; and at the census of 1891 it was found that no less than 88,000 persons resident in the district were born in Nepal. The census of 1901 showed that the tea-garden coolies and their children accounted for more than two-thirds of the total population (L. S. S. O'Malley, 1907).

#### **4.4.3.2 Agricultural Settlers**

Agriculture also encouraged large-scale immigration to the newly reclaimed lands, as would be apparent from the following facts relating to Kalimpong subdivision. In 1865 it had a population of only 3530 persons. The number increased to 12683 in 1881, 26631 in 1891 and to 41511 in 1901. The larger part of this population was composed of incoming agriculturists. With the growth of settlements of plantation works and agriculturists (who were getting cash remuneration and good crops including cardamom, a good cash crop), and of relatively well off white colour workers, the prospects of trade and commerce grew, which, again, attracted more immigrants (Banerji, et. al., 1980).

#### **4.4.4 Causes of Migration in Darjeeling**

O'Malley mentioned that the continued migration from east Nepal was due to the pressure on land there. Furer Haimendorf also reiterates the fact of population pressure and scarcity of land as major factors causing emigration from Nepal. Kanjekar regards the conquest of the Kathmandu valley and the later expansion and unification of Nepal by king Prithvi Narayan Shah as the important causes of emigration from Nepal. Another factor he points out is the Kut (Kut means a contract of agricultural operation in which the lessee pays a fixed amount of grain to the lesser. This contract may be elastic or rigid depending upon the relationship between the two parties) systems of land tenure, which impoverished the peasants of Nepal and made them, leave their homeland. He also talks of the recruitment of the Nepalese in the British army as an important factor. Dutt talks of other factors like increasing population, fragmented landholdings, indebtedness, ecological crisis and food deficit. According to him the other factors are the Anglo-Nepalese Friendship Treaty of 1850, the Tripartite Delhi Agreement of 1951 and the revised Indo-Nepal Agreement of 1956.

#### **4.4.5 Impacts of Migration**

Though, the reason behind is mainly the natural growth of population even the migration in the region also may be considered as an important and effective factor to give impetus in population growth. Considering growth rate rank (1981-91) of the districts of West Bengal, out of 17, Darjeeling district stands in second rank. There has been marked acceleration in urbanization process in the district of Darjeeling (Datta, 2003).

Taking into consideration the variation in urban sex ratios, Darjeeling district may be placed here as an example. In this context, it is noteworthy that whereas in urban areas of three hill subdivisions, the women compose 47 percent of total population, while in Siliguri town they formed 44 percent of population (1981 census). The reason behind is that most of the immigrants into the urban areas of the hills except from Rajasthan and Bihar are permanent settlers and as such live with their women folk, whereas a greater number of immigrants to Siliguri town are traders, skilled or unskilled workers and day Labourers who are non-permanent

residents. In rural areas of Siliguri too, specially in the tea gardens, more on-permanent residents are to be found than in the hill Sub-divisions. Hence, there are considerable variations of the sex ratio according to whether the area is hill or not, whether the area is the newly emerging town or not, and whether the area is tea garden or not (Datta, 2003).

With the increase in population there has been a trend that the land-man ratio for cultivable land is continuously on the decline. Darjeeling hills substantiate this fact that there has been a trend of decrease in land-man ratio for cultivable land. The percentage of agricultural area to total geographical area has increased in Darjeeling district considerably. Even then, due to more increase of population in this region the per capita agricultural area is considerably on the decline.

Information on forest resources is also important to be discussed here in respect of proper understanding the demography and migration situation. Major portion of the forest areas of North Bengal are mainly found in Darjeeling and Jalpaiguri districts of the region. In Darjeeling district 41.75 percent of the geographical area is under forest. Prior to independence, more than 63 percent of the total areas of Darjeeling district were covered with dense forest. But due to large-scale migration from bordering States, countries (along with natural population growth and the resultant increase in population), as well as, along with massive destruction of trees in successive decades because of railways, industries, illegal cutting and felling, establishment of new settlement and agriculture/cultivable areas after clearing forests, etc. the forest in North Bengal are rapidly decaying. So, we see that the destruction of forest and eco-system are taking place simultaneously with increasing in population (both due to natural growth as well as migration of population) in this region (Datta, 2003).

The number of married males is more than that of married females in Darjeeling district. The reason behind this fact may be the presence of immigrant-married males in the district who have kept their wives in the place of origin.

#### **4.4.6 Conclusions**

The entire preceding discussion presented is comprehensive in respect of migration, which has dealt with the importance of social aspects and dimensions mainly of voluntary international as well as internal migration in the region. Migration is although as old as human history, the massive population movements of the modern times have wider social, economic, political, demographic and ecological implications. Indeed, there are a host of general factors, which tend to move people between nations as well as between places within the national boundaries/borders. Migration is important because it may have adverse as well as favourable effects. For doing this, it urgently requires to understand the major operative factors behind the voluntary migration in the society. In fact, the movement of human population which has always been an essential ingredient of social change has had tended mainly to be considered primarily in terms of economic interest. But, in reality the economic aspect cannot be taken into consideration as an exclusive singular factor behind any type of voluntary migration in the society. Because, it embraces, however, many complex aspects of human aspirations and changing circumstances which are developed in the initial decision to migrate taken in the community of origin and the process of adjustment and settlement in the community to which the migrant comes. In this context, it may be said that the voluntary migrations from one place to another in the same country and/or from one to another country indeed are part of a social process and not an entirely economic process. The importance of migration in the region has been overwhelming (Datta, 2003). Because, the region has been experienced steady flow of migrants from different corners of the country as well as outside the country.

Our Hypothesis I that there is a positive correlation between population growth and migration in hill regions is proved here.

### **4.5 Missionaries**

#### **4.5.1 Introduction**

British came to India with completely different cultural tradition – the commercial aims. To attain the end English education was required and it was introduced by the East India Company. It is to be mentioned that the Charter Act of 1813 opened India to Missionary societies and so the period from 1813 to 1833 could

be regarded as one of great mission activity in all parts of the Company's rule. From 1813 the Company set aside some money for education and after the Charter Act of 1833 English became the official language. Alexander Duff, the greatest missionary of this period, had faith in the potential power of English Education to secure converts. Almost all the missionaries and English schools maintained by missionaries began to spread very rapidly after 1830. It was found that Hindus and Muslims were eager to get modern western education.

#### **4.5.2 Missionaries in Darjeeling**

In Darjeeling the Christian missionaries were the pioneers in the field of education (Sen, 1989). It is to be mentioned that from 1835 to 1866 many modern activities were introduced by the missionaries including educational activities in the region of Darjeeling district (Bagchi, 1998).

##### **4.5.2.1 European Education**

Darjeeling is home to several public schools operating on the British model. A summer retreat for the British in India, Darjeeling soon became the place of choice for the establishment of public schools on the model of Eton, Harrow and Rugby, allowing the children of British administrators to obtain a British education without returning to Britain. It helped that the weather in Darjeeling is cool and in some ways, similar to that in the England. Institutions attract students from all over India and South Asia. Even after independence, these institutions, some over a hundred years old, still adhere to the traditions that are a part of any public school. Darjeeling in colonial days became famous as a centre of European education. The schools worth mentioning in the three sub-divisions, i.e., Darjeeling, Kurseong and Kalimpong are following:

##### **Darjeeling Sub-division:**

**Loreto Convent:** The first European Roman Catholic School was the Loreto Convent for girls founded in 1846 and managed by Loreto Nuns who had their motherhouse in Rathfarnham, Dublin. Mother H. Teresa with her assistant, sister Gabriel, an Irish pioneer nun, was the founder of the Loreto convent. The courses of

study were those laid down by the code of Education for European schools and include preparation for the Cambridge junior school and high school certificate Examination, for the Trinity College of Music and Royal Drawing Society art examinations and for elocution examinations. Non-Catholic students are given instruction in moral philosophy but Catholic students were given religious instruction in catholic doctrine (Bagchi, 1998).

**St. Paul's School:** St. Paul's School for boys was established in Darjeeling in 1868. Part of the fund used to finance the opening was derived from the sale proceeds of a St. Paul's School, which had been located in a building in Chowringhee, Calcutta from 1848. The Bishop of Calcutta was the president of the School committee, which used to manage the school administration. The members of the staff were highly qualified; all of these were mainly graduates of Oxford or Cambridge (Bagchi, 1998).

**St. Joseph's School:** In the mean time Roman Catholic St. Joseph's School was established and imparted a very high standard education to the children of the European community. This Jesuit institution was opened in 1888, under the direction of the Fathers of the Society of Jesus. The institution was first established in a building known as St. Joseph's Seminary at Sunny Bank and later transferred in 1892 to North Point to its present site. Father Henry Depelchin was given charge of the small school at Sunny Bank. In the beginning the school was maintained only for Catholic students, but later students of other denominations were admitted (Bagchi, 1998).

**Mount Hermon School:** In 1895 the Methodist Episcopal church of America provided a school for English speaking children. The main school building is known as Queen's Hill. The school was founded in order to provide Christian education in a favourable climate, where under proper influence and guidance the students' mental, moral and physical development takes place. The Mount Hermon Estate at North Point, got 100 acres of land and the school building and playground are situated there (Bagchi, 1998). Mount Hermon School is the only school in the area to be modelled on the American educational system.

**St. Michael's School:** Bishop Milmen of Calcutta founded the Darjeeling Girls' School in 1886. In 1895 the institution was handed over to the Mission of the

Sisters of the order of St. John, the Baptist and it was made a Diocesan School with the Metropolitan as President. There was a strong cyclone in the year 1899 and the site and buildings were destroyed. The lieutenant governor placed the Darbar Hall at the disposal of the sisters for temporary use. Later the school was housed in Rivers Hill and Richmond Hill. The school afterward shifted to its present site at North Point in 1929 has known as St. Michael's School (Bagchi, 1998).

#### **Kurseong Sub-division:**

**St. Helen's Girls' School and Convent:** St. Helen's Girls' School and Convent was founded by the Roman Catholic Daughters of the Cross of Leige in 1890. Mother Marie, the then Provincial opened this school in a small rented house. In 1891 it was removed to larger premises because of the earthquake of 1897. In 1900 the school moved to a newly constructed building on an extensive ground (Bagchi, 1998).

**St. Alphonsus School:** St. Alphonsus School was established for the native pupils by the Roman Catholic Church. Roman Catholic Church established it as a primary school in 1888 outside the municipal area; the school was upgraded to the level of a High School in 1936. St. Alphonsus tried to give a good education to the poorer section of the Darjeeling Hill area.

**The Victoria School:** The Victoria School at Dow Hill is one of the oldest schools in the district for the Europeans of the town. It was established at Constantia by Sir Ashley Eden in 1879 as a co-educational institution but was removed to Dow Hill in 1880. This school was originally established for railway employees as govt. school. Dow Hill Girls' school till 1898 functioned as a Middle English School.

#### **Kalimpong Sub-division:**

**The Church of Scotland Mission Girls' High School and Training College:** In 1891 a Girls' School was started by Mrs. Graham, the first Anglo-Indian teacher of this school, Miss Higinson, was appointed by the Women's Association. One of her brightest student Buddhimaya helped her in her work and so Buddhimaya was given the entire charge of the school. Another brilliant teacher, Miss Lily Waugh,

joined in 1898. This school imparted general instruction to girls or women and it also acted as training institution. The training school for women attached to the Church of Scotland Mission Girls' institution was two of the earliest institution for teachers' training in the district (Bagchi, 1998).

**Dr. Grahams' Homes:** Rev. J A Graham founded in 1900 an important educational institution to provide for children of British and European descent education and training based upon protestant principles. Originally the school was known as St. Andrew's Colonial Homes but now as Dr. Grahams' Homes (Bagchi, 1998).

**St. Joseph's Convent:** St. Joseph's Convent was founded in 1922 at Kalimpong by the Missionaries of the Roman Catholic sisters of St. Joseph's of Cluny. At first it was established as sanatorium for the sisters teaching in the plains but gradually it turned into an important educational institution with a boarding school for European and Anglo-Indian girls. Boys up to the age of eight were also admitted.

There were also many other distinguished institutions in the three hill subdivisions.

#### **4.5.2.2 Vernacular Education**

The first attempt to reach the hill people by education was made about 1850 by Rev. W. Start, a private missionary, who opened a school for the Lepchas. After him came a band of German missionaries, one of whom, Mr. Niebel, devoted himself to schoolwork, prepared some Lepcha primers and gathered boys together into schools. It was not however until the advent of Rev. William MacFarlane in 1869 that many broad scheme of vernacular education was introduced into the District. In 1873 a school for the Bhutias was established. He realized that it would be essential to train teachers and with this object he collected a band of hill boys, to teach whom he devoted the first years of his missionary life in the hills. This group of boys was the nucleus of a training school at Kalimpong (Mitra, 1951).

### **4.5.3 Conclusions**

The introduction of western ideas and values through English education had a great impact on Indian society not only during the British rule but also after independence. In certain respects, the influences created in the intellectual, cultural and ideological spheres as a result of Western ideas and values were deeper than the changes introduced in the political and administrative spheres (Mathew, 1988). In the introduction of western influences through English education, the role of Christian missions, both Protestant and Roman Catholic, has been a very crucial one.

## **4.6 Railways**

### **4.6.1 Introduction**

No railways operated in India in 1850. Twenty-five years later India had an extensive network of trunk lines; trains ran over a railway network encompassing 6541 route miles. Fifty years later, in 1900, trains steamed through most parts of India along railways whose trunk and branch lines extended over 25000 miles of track. Construction of the line to Kalyan via Thana – an area has covered by the network of Bombay Suburban lines whose rush-hour electric trains, jammed to overflowing with passengers, ran back to back at brief intervals – began in the Fall of 1850 (Kerr, 1995).

### **4.6.2 Darjeeling Himalayan Railway**

Declared a world Heritage site in 1999 by the United Nations Educational, Scientific and Cultural Organization (UNESCO) the second Railway site in the world to be accorded such a status for its outstanding universal value, Darjeeling Himalayan Railway, which is a jewel in the crown of the Indian Railways links New Jalpaiguri/Siliguri to the hill station of Darjeeling in the Eastern Himalayas.

This Railway of two feet gauge, opened in 1880, runs for 50 miles from Siliguri in the plains (Black, Vol. XXVII). In 1914, the Darjeeling Himalayan Railway (DHR) was further extended down south towards Kishanganj and close to the Nepalese frontier for jute traffic. In the meantime the DHR was extended from Siliguri toward Sevoke by 10 miles and further to the north 16 miles on Kalimpong

road in 1915. After India's Independence in 1947 the DHR was purchased outright on 20<sup>th</sup> October 1948 by the Indian Government and is absorbed into the Indian Government Railways organization. In 1950 the Kishanganj to Siliguri and Siliguri to Sevoke sections of the two DHR branch lines were replaced by metre gauge track as part of the new Assam Rail Link Project. The DHR came under the management of the Assam Railways organization. But the branch line to Kalimpong was abandoned in 1951 (Bhandari, 2005). In 1952 Assam Railways including the DHR became part of the North Eastern Railway zone. In 1958 The DHR and other Assam lines were transferred to the new North East Frontier Railway Zone.

The DHR is one of the only three remaining 2 feet gauge passenger lines on Indian Railways. The others are at Matheran, another hill railway, and the lengthy Gwalior System, in the plains (Bhandari, 2005).

#### **4.6.3 Economy**

The purpose of the Darjeeling Himalayan Railway was to reduce the haulage rates of essential commodities (such as rice) to Darjeeling and to improve the economic viability of local industries such as tea production. Earlier, the DHR had put Darjeeling on the world tea map. It was practically aimed at carrying the tea to the plains. In its earlier days of open carriages, it had ferried tea from the hills to the railheads on the plains to be transhipped to far away destinations. In 1881, in its first full year of operation the line carried 380 tons of goods. In 1885 a short extension for goods traffic was opened to the bazar at Darjeeling. The downward traffic of the main line was principally tea, seed, potatoes, cardamoms, oranges, timber and fresh vegetables. The upward traffic of this section was principally rice and other food grains, flour, tea garden stores, oil, coal, cement, iron, salt, building materials, miscellaneous goods and general stores. Down the Teesta Valley line were carried wool from Tibet, and large quantities of oranges from Sikkim during the winter season, cardamoms, potatoes and timber (O'Malley, 2001). While the branch carried imports of food-grains, salt, piece goods, provisions and building materials.

The progress in handling goods traffic since 1909 is shown in table – 4.6.

**Table – 4.6: Progress in Handling Goods Traffic**

Year	Main Line Goods Tons (000's)	Teesta Valley Extension Goods Tons (000's)
1909-10	47	-
1919-20	62	29
1929-30	80	28
1934-35	76	30
1939-40	66	50
1940-41	57	43
1941-42	63	40
1942-43	63	38
1943-44	76	29

Source: Dash, A J: Bengal District Gazetteers – Darjeeling, Bengal Government Press, 1947.

The progress in handling passenger traffic since 1909 is shown in table – 4.7 below: -

**Table – 4.7: Progress in Handling Passenger Traffic**

Year	Main Line No. of passengers (000's)	Teesta Valley Extension No. of passengers (000's)
1909-10	174	-
1919-20	263	34
1929-30	258	23
1934-35	240	12
1939-40	214	16
1940-41	206	15
1941-42	240	19
1942-43	309	36
1943-44	311	53

Source: Dash, A J: Bengal District Gazetteers – Darjeeling, Bengal Government Press, 1947.

In 1881, in its first full year of operation the line carried 8,000 passengers. From a quarter million passenger in 1914, the traffic rose to 300,000 passengers in

few years. The effect of World War II dramatically increased traffic on the DHR, which plays a vital role transporting military personnel and supplies to the numerous camps around Ghum and Darjeeling.

From the 1970s onwards, road competition cut increasingly deeply into the DHR's traffic. In 1984 the once important railway mail services on the line ended in the face of competition with the road transport. In 1988-89 the line was closed for 18 months due to civil unrest. In 1993 competition from road haulage and the interruption to services in previous years finally ended the freight services. As the freight services is abandoned and the Toy Train is now taking long hours comparing to the road transport, the influx of tourists through DHR is decreasing.

#### **4.6.4 Conclusions**

The two most significant contributors to the development of Darjeeling's economy were tourism and the tea industry. And that was mainly possible due to the introduction of DHR in the hills. Innovative engineering is only one facet of the inimitable DHR. Perhaps, no other railway system in the world is as intimately related with the lives of the peoples. DHR has been part of the Darjeeling landscape for over a hundred years. The railway was instrumental in attracting people from neighbouring Sikkim, Nepal, different districts of West Bengal and even as far away as Tibet.

#### **4.7 Other Factors**

In addition to the above-mentioned factors there is also other factors, which has as well very significant impacts on the growth of population in the Darjeeling hill areas. Some quantity of different minerals is available here. A hydropower plant is also situated here. And it has now developed as an important centre of trade and commerce. Here are the other factors in detail.

##### **4.7.1 Minerals**

Coal of good quality was found in the Gondwana rocks running from near Pankhabari to Dalingkot (Black, Vol. VI). There was a coalmine at Daling, employing 260 persons, with an output of 2000 tons in British period (Black, Vol. XXVII). The

Census 1951 mentions that the Bagrakot coal mine is still working. A labour force of not more than 50 persons was then employed on extraction of this coal.

A little iron was manufactured, lime is obtained in large quantities, building stone is abundant and slate is found. Copper mining was carried on to a somewhat greater extent, but the methods adopted by the natives were of a very primitive kind (Black, Vol. VI). Copper ores, chiefly chalcopyrite, occurred near Ranihat, on the western side of Mahanadi, at Peshok, on the left bank of the Teesta river east of Mangpu and in the neighbourhood of the Chel river.

#### **4.7.2 Hydropower Plant**

India's first hydropower plant located at Sidrapong near Darjeeling built in 1897 has completed its 100 years of its existence (Lama, 2002), and is still working.

#### **4.7.3 Cottage Industry**

The principal products of cottage industry in the district were blankets, woolen knitted articles, woven cotton and wool fabrics, kukris, various tools, pottery, bamboo products (baskets, mats, ghooms etc) and ropes. In making a survey of cottage industries, the Kalimpong Industrial School deserves prominent mention. Large number of the carpenters working in the Darjeeling district and Western Dooars has passed from this Industrial School and sometimes the specialized skill had become hereditary.

#### **4.7.4 Trade and Commerce**

Surrounded by Nepal, Sikkim, Bhutan and Tibet, Darjeeling had, in the second half of the nineteenth century, splendid opportunity to develop as an entrepot of Central Asian trade (Sen, 1989). The road system of the district as well as the Darjeeling Himalayan Railway system facilitated trade. It had three categories of trade i.e. with the plains, trade moving over the frontiers of Bhutan, Sikkim and Nepal and local trade within the district. From 1861 onwards Darjeeling as a commercial centre attracted attention of mercantile community. The centres of trade activities in Darjeeling were usually the weekly markets and the religious fairs. The registration stations were the centres of transit trade (Sen, 1989). The main commodities of trade

are – paddy, gram and pulses, salt, sugar, wool, raw cotton, oranges, raw jute, iron and steel, kerosene, petrol, tobacco, coal, tea, marble stone etc.

The merchandise imported from Sikkim consisted of horses, cattle including sheep and goats, blankets, salt, musk, wax, ghee, oranges, millet, rice, lime and copper. There was a steady annual increase of trade. The imports in 1863 were nearly double of those in 1860. The money earned during the four years under notice amounted to Rs. 89,535 out of which the sum of Rs. 19,450 was returned to Sikkim in the shape of goods. The articles of export to Sikkim included English cloth, metal utensils, tobacco and coral. Among the items of export, only tobacco was grown in the terai and other items were not manufacture locally. With the improvement of communications, it has been expected that great quantities of tea would be exported to Sikkim and Tibet replacing brick tea imported from Lhasa and China (Sen, 1989).

The trade with Tibet consisted of the importation of horses, blankets, tea, turquoise, musk, ox-tails, salt, gold, silver, precious stones, musical instruments, shoes and coarse woolen stuffs. The principal import was wool. The imports increased greatly during 1860-63. The total price of goods sold amounted to Rs. 64,005. Out of this amount Rs. 43,700 was spent in Darjeeling for the purchase of goods for exports. The balance of Rs. 20,305 was taken away in cash. The articles exported to Tibet were chiefly tobacco, indigo and kutch (catechu) (Sen, 1989).

The imports from Nepal to Darjeeling included cotton piece goods (Indian), food grains, gram and pulses, hides and skins, ghee, wool (manufactured), sheep, goats, cattle, poultry, butter, mustard. Exports to Nepal from Darjeeling included piece goods (European and Indian), cotton twist and yarn, salt, kerosene oil, tobacco, food grains, brass-pots and copper. Darjeeling depended to a very great extent on Nepal for its supply of animal food (Sen, 1989).

While Marwari, Bengali and Bihari bankers generally financed commodity markets and trade, branches of the Imperial Bank of India and Lloyds Bank provided general banking facilities in Darjeeling. The Imperial Bank opened its Darjeeling branch in September 1922. It also provided funds for tea gardens in the district. A branch of Lloyds Bank was opened in 1935, which also provided funds for tea gardens and general banking facilities.

#### **4.7.5 Conclusions**

The cession of Darjeeling was an event of the greatest importance in the history of northern frontier of India. Not only did it place the British in close contact with the hill states, their peoples and their politics, but also it provided a constant reminder of the possibilities of trade with Tibet (Sen, 1989). The growth of population also facilitated trade.

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## **CHAPTER V**

### **Economic Trends and Miscellaneous Occupations**

- **Introduction**
  
- **Livelihood Pattern**
  
- **Level of Prices**
  
- **Occupational Shifts**
  - **Theories**
  
  - **Occupational Shifts in Darjeeling**
  
- **Conclusions**

## CHAPTER V

### Economic Trends and Miscellaneous Occupations

#### 5.1 Introduction

Labour, being a primary factor of production and the size of labour force is of great importance for the level of economic activity in a country. It is helpful to understand some related concepts like work, workers and work participation rate being used in the Indian context.

‘Work’ has been defined in the Census of India, 1991 and in 2001 as participation in any economically productive activity. In practice, such participation may be physical or mental. The ‘work’ also includes unpaid work on a farm or in family enterprises. Work also includes supervision and direction. According to the Census, a distinction has to be made between ‘main workers’ and ‘marginal workers’. ‘Main workers’ are those who have worked at least for six months, whereas the ‘marginal workers’ are those who have worked for less than six months in any given year. There are also other workers not having any work in a year before the census date (Jhingan, et. al., 2003 and Census of India, 2001).

The main workers are divided into: (a) cultivators, (b) field workers, (c) persons engaged in household industry and (d) other workers. The non-workers are divided into: (i) persons engaged in unpaid home duties, (ii) students, (iii) dependents, (iv) retired persons, (v) beggars, (vi) inmates of jails and (vii) other non-workers not included in the above categories. Thus the total population of a country is divided into working population and non-working population. The working population is the labour force of a country, which excludes children below the age of 15, and old people above the age of 60 years (Jhingan, et. al., 2003).

In the 1961 Census, the basis of work was considered to be satisfied if a person in the case of seasonal work like cultivation, livestock, dairying, household industry, etc, had some regular work of more than one hour a day throughout the greater part of the working season. During 1961 Census, many such persons whose main activity was not economic were classified as workers (Datt and Sundharam, 1993).

A rigorous and more meaningful definition was again adopted in 1971 census. A worker according to the 1971 census is a person whose main activity is participation in any economically productive work by his physical or mental activity. Work involves not only actual work but also effective supervision and direction of work. This implies that a man or woman who is engaged primarily in household activities such as cooking for own household or a boy or girl who is primarily a student attending an institution, even if such a person helps in the family economic activity but not as a full time worker, should not be treated as a worker for the main activity.

The Census of 1981 carries forward the tradition of the Census of 1971 in making the definition of 'worker' rigorous and more meaningful and has classified the workers into 'main workers' and 'marginal workers'.

## 5.2 Livelihood Pattern

The work force participation rate in a country, i.e., proportion of working population to total population, depends upon such factors as age and sex composition, attitude to work, availability of work etc. all these factors differ in different countries and may differ even within the same country in periods.

**Table – 5.1: Total Main Workers**

District/ Sub-division		1961			1971			1981		
		Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
Darjeeling (District)	Total	266105	178969	87136	282442	203273	79169	358590	265002	94588
	Rural	215983	134415	81568	229327	155144	74183	275137	189250	85887
	Urban	50127	44559	5568	53115	48129	4986	83453	74752	8701
Darjeeling (Sadar)	Total	86553	51880	34673	91269	55745	35524	100573	63112	37461
	Rural	72962	40365	32597	78969	45683	33286	84081	49315	34766
	Urban	13591	11515	2076	12300	10062	2238	16492	13797	2695
Kalimpong	Total	47347	25927	21420	54890	37505	17385	59381	40511	18870
	Rural	48490	29158	19332	48355	31848	16507	50365	32979	17386
	Urban	8857	6769	2088	6535	5657	878	9016	7532	1484
Kurseong	Total	32608	19918	12690	34762	21428	13334	38563	26338	12225
	Rural	28660	16601	12059	30636	17969	12667	31554	20520	11034
	Urban	3948	3317	631	4126	3459	667	7009	5818	1191

Source: District Census Handbook, Darjeeling, 1961, 1971 and 1981

Figure – 5.1

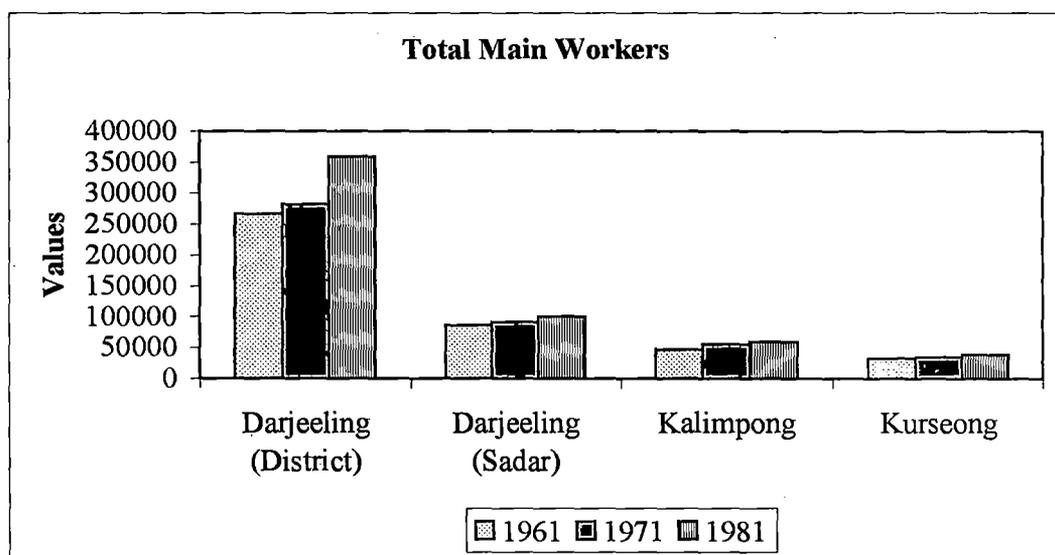


Table – 5.1 shows that the number of total main workers in the three hill subdivisions had increased between 1961 and 1981. But the rural main workers in Kalimpong subdivision had shown a decreasing trend during 1961-1971. Though during 1971-1981 the same had improved in this subdivision. The urban main workers in Darjeeling and Kalimpong subdivisions had also shown a decreasing trend during 1961-1971. However, during 1971-1981 the same had improved in both the subdivisions. Table – 5.1 reveals that as against the participation rate of female main workers recorded in 1961 Census, the proportion of female main workers returned in 1971 Census came down to some extent. This was mainly due to the fact that many of the housewives and students who were treated as workers on the basis of some marginal contribution in 1961 Census were not included in 1971 Census as workers. Consequently, the ratio of female workers to total female population got considerably reduced in 1971 Census. The work participation rate for females had shown a decreasing trend both in the district in general and in Kalimpong sub-division in particular during 1961-1971. However in Darjeeling and Kurseong sub-division the same had shown an increasing trend. During 1971-1981 female work participation rate had improved in the three hill sub-divisions and so also the district. The urban work participation rate for males had shown a decreasing trend both in Darjeeling and Kalimpong subdivisions during 1961-1971. However, during 1971-1981 the same had improved in both the sub divisions. Total main workers of the district as well as three hill subdivisions during 1961-81 are depicted in figure – 5.1.

**Table – 5.2: Non-Workers in Darjeeling District and Sadar, Kalimpong and Kurseong Subdivisions**

District/ Sub-division		1961			1971			1981		
		Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
Darjeeling (District)	Total	358535	156067	202468	499335	212169	287166	653073	27370	379370
	Rural	264020	117082	146938	372238	159790	212448	455310	194835	260475
	Urban	94515	38985	55530	127097	52379	74718	197763	78868	118895
Darjeeling (Sadar)	Total	116970	53081	63889	153938	69696	84242	176390	79924	96466
	Rural	89910	41860	48050	123365	56772	66593	135562	62951	72611
	Urban	27060	11221	15839	30573	12924	17649	40828	16973	23855
Kalimpong	Total	63179	28754	34425	79648	34034	45614	97089	41326	55763
	Rural	46931	21573	25358	62753	27013	35740	73865	31864	42001
	Urban	16248	7181	9067	16895	7021	9874	23224	9462	13762
Kurseong	Total	48135	21871	26264	65471	29944	35527	72092	32658	39434
	Rural	38673	17986	20687	53172	24698	28474	50115	23300	26815
	Urban	9462	3885	5577	12299	5246	7053	21977	9358	12619

Source: District Census Handbook, Darjeeling, 1961, 1971 and 1981

**Figure – 5.2**

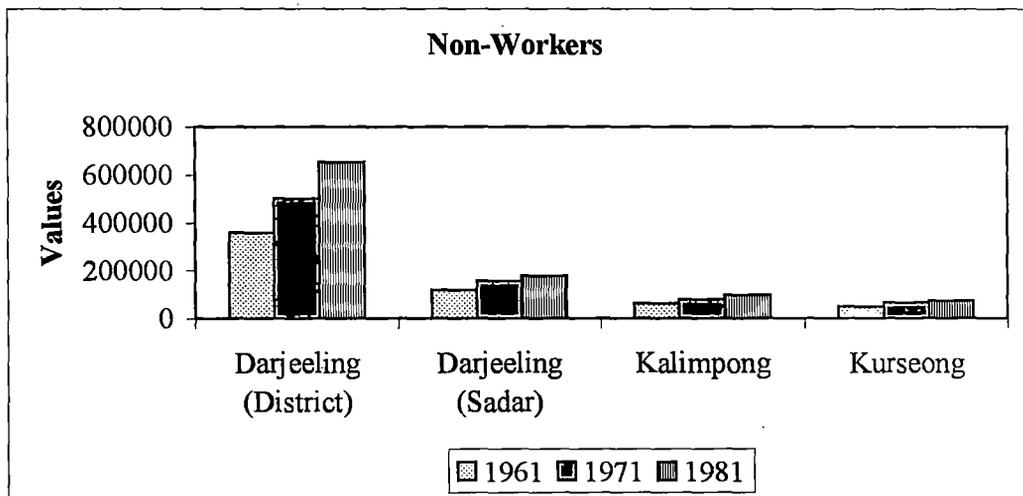


Table – 5.2 shows that the number of total non-workers in the three hill subdivisions had increased between 1961 and 1981. But the urban male non-workers in Kalimpong subdivision have shown a decreasing trend during 1961-1971. Though

during 1971-1981 the same has improved in this subdivision. Again the rural non-workers male as well as female in Kurseong subdivision has shown a decreasing trend during 1971-1981. Total non-workers of the district as well as three hill subdivisions during 1961-81 are depicted in figure – 5.2.

**Table – 5.3: Cultivators in the Hilly Subdivisions of Darjeeling District**

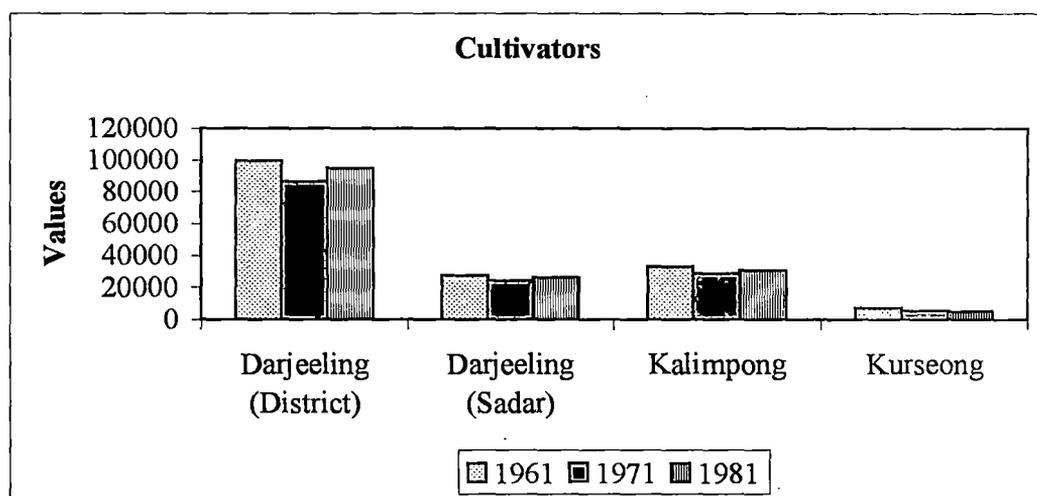
District/ Sub-division		1961			1971			1981		
		Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
Darjeeling (District)	Total	99703	59825	39878	86054	60948	25106	94728	65679	29049
	Rural	99038	59436	39602	85336	60435	24901	94170	65238	28932
	Urban	665	389	276	718	513	205	558	441	117
Darjeeling (Sadar)	Total	27310	13941	13369	24332	14225	10107	26174	14750	11424
	Rural	27107	13839	13268	24028	14055	9973	26094	14674	11420
	Urban	203	102	101	304	170	134	80	76	4
Kalimpong	Total	32711	17325	15386	28529	17138	11391	30751	18864	11887
	Rural	32329	17112	15217	28275	16952	11323	30457	18672	11785
	Urban	382	213	169	254	186	68	294	192	102
Kurseong	Total	7304	3674	3630	5727	3567	2160	4997	2956	2041
	Rural	7302	3673	3629	5707	3548	2159	4953	2920	2033
	Urban	2	1	1	20	19	1	44	36	8

Source: District Census Handbook, Darjeeling, 1961, 1971 and 1981

Table – 5.3 shows that the number of total cultivators and total rural cultivators as well as the female total cultivators and rural female cultivators in the three hill subdivisions had decreased between 1961 and 1971. Though during 1971-1981 the same had improved in Darjeeling and Kalimpong subdivisions. But in Kurseong subdivision again the number decreased during 1971-1981. The male total cultivators, rural male cultivators and urban cultivators in Kalimpong subdivision decreased during 1961-1971, but it increased during 1971-1981. Again the male total cultivators and male rural cultivators in Kurseong subdivision decreased between 1961 and 1981. In Sadar subdivision the number of urban cultivators have first increased during 1961-1971, but then decreased during 1971-1981. In Kurseong subdivision the number of urban cultivators have increased between 1961 and 1981.

Total cultivators of the district as well as three hill subdivisions during 1961-81 are depicted in figure – 5.3.

**Figure – 5.3**



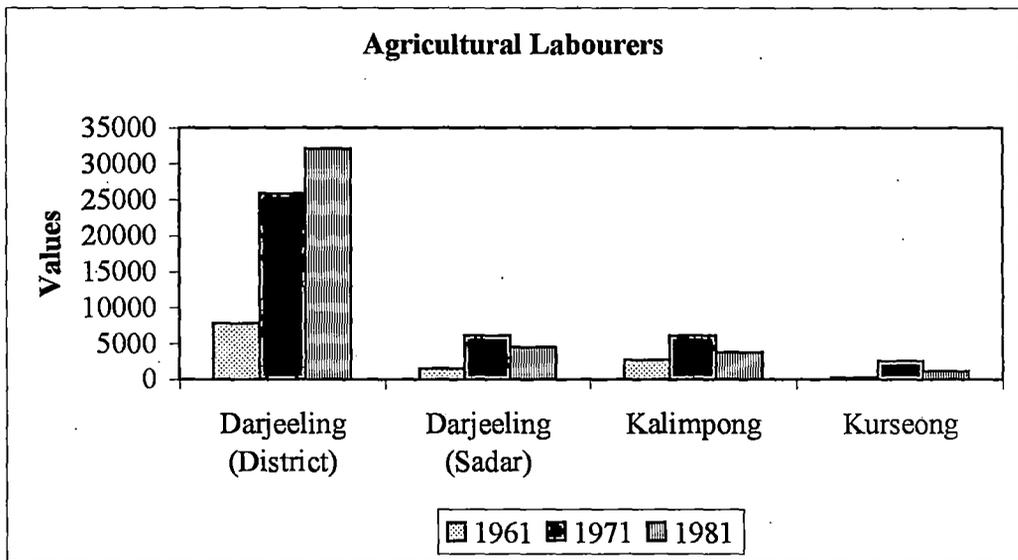
**Table – 5.4: Agricultural Labourers**

District/ Sub-division		1961			1971			1981		
		Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
Darjeeling (District)	Total	7807	5361	2446	25783	18450	7333	32120	24807	7313
	Rural	7162	5044	2118	24982	17842	7140	31547	24359	7188
	Urban	645	317	328	801	608	193	573	448	125
Darjeeling (Sadar)	Total	1460	683	777	6117	3739	2378	4423	2873	1550
	Rural	1448	677	771	5873	3596	2277	4402	2858	1544
	Urban	12	6	6	244	143	101	21	15	6
Kalimpong	Total	2643	1510	1133	6095	3789	2306	3730	2574	1156
	Rural	2049	1235	814	5935	3675	2260	3522	2411	1111
	Urban	594	275	319	160	114	46	208	163	45
Kurseong	Total	311	186	125	2559	1587	972	1159	728	431
	Rural	311	186	125	2554	1582	972	1088	691	397
	Urban	0	0	0	5	5	0	71	37	34

Source: District Census Handbook, Darjeeling, 1961, 1971 and 1981

Table – 5.4 shows that the number of total agricultural labourers and rural agricultural labourers in the three hill subdivisions had at first increased between 1961 and 1971 then decreased between 1971 and 1981. The same pattern was also followed in Sadar subdivision for the urban agricultural labourers. In Kalimpong subdivision the number of urban agricultural labourers had decreased during 1961-1971, but it had increased during 1971-1981 excluding the female agricultural labourers, which again decreased marginally. In Kurseong subdivision the number of urban agricultural labourers increased between 1961 and 1981. Total agricultural labourers of the district as well as three hill subdivisions during 1961-81 are depicted in figure – 5.4.

Figure – 5.4



### 5.3 Level of Prices

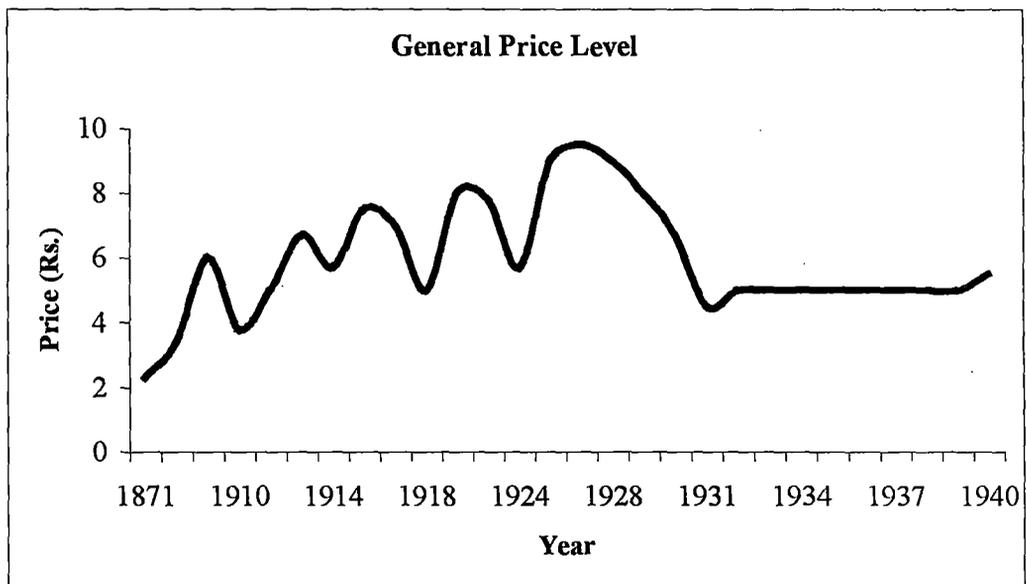
In 1871 the ordinary price of cheap rice eaten by coolies was Re. 1-4 a maund in the Terai and Rs. 2-4 a maund in the hills, while the other staple food of the people, Indian corn, was sold at Re. 1-8 a maund. In 1907, the price of these articles of food was 50 percent as great (Banerji, et. al., 1980). The general price level during 1871-1940 has been represented in table – 5.5.1 while the trend of general price level has been shown in figure – 5.5.1.

**Table – 5.5.1: Coarse rice (Prices in Rupees and Paise Per Maund): 1871-1940**

Year	Rs.	Year	Rs.	Year	Rs.	Year	Rs.
1871	2.3	1915	7.5	1927	9.5	1934	5
1903	3.4	1916	7	1928	9	1935	5
1907	6	1918	5	1929	8	1936	5
1910	3.8	1919	8	1930	6.7	1937	5
1912	5	1921	7.8	1931	4.5	1938	5
1913	6.7	1924	5.7	1932	5	1939	5
1914	5.7	1926	9	1933	5	1940	5.5

Source: Banerji, Amiya Kumar, et. al.: West Bengal District Gazetteers – Darjeeling, 1980

**Figure – 5.5.1**



From 1942 began a violent upward movement of prices corresponding to the famine prices, which developed in the rest of Bengal in 1943. The price of rice reached its peak of Rs. 40 per maund in 1943; it gradually declined and under government control it was steadied and came down to Rs. 13-12 in 1945 (Banerji, et. al., 1980). The general price level during 1943-68 has been represented in table – 5.5.2 while the trend of general price level has been shown in figure – 5.5.2.

This stability was, however, short-lived. From 1946 rice prices began to move up and reached the Rs. 33.50 per maund mark for the coarse variety in the wholesale markets of Siliguri in 1951 but gradually declined to Rs. 14.31 a maund in May 1955. There was a spurt in prices soon afterwards and the average price per maund of same variety progressively rose to Rs. 19.67 in 1956, Rs. 22.44 in 1957 and Rs. 26.14 in 1958 but receded to Rs. 23.19 in 1959, Rs. 21.75 in 1960, Rs. 19.56 in 1961 and Rs. 19.12 in 1962. This downward trend was reversed again by a spiralling of prices since 1963, when in October of the same year the price per quintal of coarse rice soared to Rs. 85.83 (the average for the year being Rs. 71.88) necessitating the intervention of the State Government, which controlled the prices of rice and paddy from 1964. The maximum retail price per kilogram of rice valid for April 1968 was Rs. 1.70. The price movements were not very significant in 1973 and 1974 in view of the galloping inflation (Banerji, et. al., 1980).

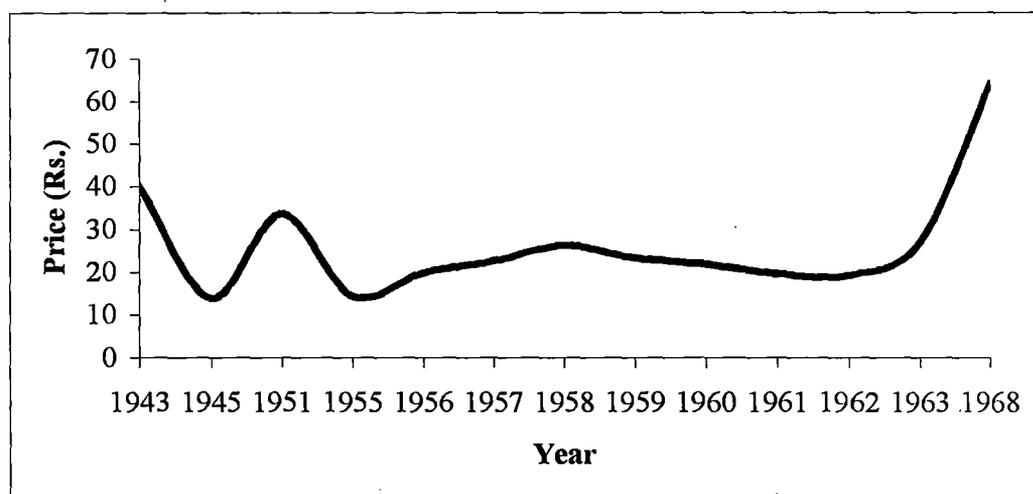
**Table – 5.5.2: Coarse rice (Prices in Rupees and Paise Per Maund): 1943-1968**

Year	Rs.	Year	Rs.
1943	40	1959	23.19
1945	13.8	1960	21.75
1951	33.5	1961	19.56
1955	14.31	1962	19.12
1956	19.67	1963	26.82
1957	22.44	1968	63.78
1958	26.14		

Source: Compiled by this scholar on the basis of the previous data

(According to the currency system prevalent before 1962, 1 anna = 6 paise, 2 anna = 12 paise, 3 anna = 19 paise, 4 anna = 25 paise, 5 anna = 31 paise, 6 anna = 37 paise, 7 anna = 44 paise, 8 anna = 50 paise, 9 anna = 56 paise, 10 anna = 62 paise, 11 anna = 69 paise, 12 anna = 75 paise, 13 anna = 81 paise, 14 anna = 87 paise, 15 anna = 94 paise and 16 anna = 100 paise)

**Figure – 5.5.2**  
**General Price Level**



## **5.4 Occupational Shifts**

### **5.4.1 Theories**

The occupational structure of a country refers to the distribution of its labour force in different occupations. A. G. B. Fisher was the first economist to introduce the concepts of primary, secondary and tertiary occupations in 1933. According to him, a country could be classified with respect to the proportions of their total labour force engaged in these sectors. The primary sector includes agriculture, animal husbandry, forestry, fishery, etc, and in some versions mining. The secondary sector comprises manufacturing of every type, generally mining and as rule construction. The tertiary sector consists of transport, communications, trade, government, banking, finance, insurance, personal and domestic services (Jhingan, et. al., 2003).

Colin Clark and Simon Kuznets in their separate researches employed this distinction between primary, secondary and tertiary production. All countries start with a heavy concentration of population in primary production. As national income increases steadily and the basic necessities of life are met, there is an occupational shift of labour and other resources into manufacturing or secondary production. As national income rises further and the market for manufactured goods becomes saturated, labour and other resources shift in to the service or tertiary sector (Jhingan, et. al., 2003).

Colin Clark in his study *Conditions of Economic Progress* draws three conclusions about the relationship between economic development and occupational distribution (Jhingan, et. al., 2003).

In the first phase of economic development, there is considerable decline in the proportion of persons engaged in agriculture and allied occupations, although the total number engaged in them continues to increase (Jhingan, et. al., 2003).

In the second phase of development, when the economy is sufficiently advanced, the absolute numbers engaged in agriculture begin to decline and shift to manufacturing (Jhingan, et. al., 2003).

In the third phase of economic development, the growth rate of working population engaged in tertiary occupation becomes greater than that engaged in the secondary sector but the difference in the rates of increase in the two sectors is not wide (Jhingan, et. al., 2003).

Kuznets in his book *Modern Economic Growth* explains changes in occupational structure based on the experiences of developed countries. According to him, with development, there are changes in occupational structure in the form of shift away from agriculture to non-agricultural activities and from industry to services, with a corresponding change in the occupational status of labour. His findings may summarize as:

- a) The proportion of population engaged in agricultural sector declines in the long run.
- b) The share of the agricultural sector in total product (national income) declines with economic development.
- c) The proportion of population engaged in the industrial sector increases in the long run.
- d) The share of the industrial sector rises in the total product.
- e) The shifting of labour from the agricultural to the industrial sector is accompanied by increase in efficiency or productivity of labour.
- f) As development gains momentum, the share of the services sector in the total product increases.

- g) The proportion of population engaged in the services sector rises gradually and is usually less than that in the industrial sector. Even when the economy is developed, the share of the services sector in the total labour force may either remain constant or rise little (Jhingan, et. al., 2003).

On the basis of the studies of Clark and Kuznets, economists identify underdeveloped countries with large labour force engaged in the primary sector having low per capita income; developing countries with large proportion of labour force engaged in the industrial sector with middle per capita income and developed countries with large percentage of labour force engaged in the services sector and also producing commodities with a high income elasticity of demand, and having high per capita income (Jhingan, et. al., 2003).

#### **5.4.2 Occupational Shifts in Darjeeling**

Economic development has positive impact on the occupational structure of the country. Again the occupational structure may be a good index about the level of economic development a particular country has achieved. The decomposition of the working force over decades may point out the relative shift in the structure of the work force associated with country's economic development. Initially at a static level of the economy, primary sector is most important as compared to secondary and tertiary sector. This is reinforced by the fact that there is no conscious attempt for industrialization. Therefore, the growing population has no alternative but to join in this traditional sector. The dependence of too many working population on this relatively stagnant sector provides only subsistence. The marginal productivity of the labourers engaged in this sector being almost zero leaves nothing for capital formation which is the cornerstone of economic development. The main thrust of economic development is to create infrastructure of industrialization and to dynamise the traditional agriculture by introducing modernization and to shift the surplus work force from the primary activities to the secondary sector. When economic development gathers momentum and more and more investment is made on industrialization of the country, secondary sector begins to absorb the larger and larger workforce of the country. As industrialization gets impetus, different types of allied activities like marketing, insurance, banking and finance and demand for

general services grow *pari passu*. At a matured stage of economic development the tertiary sector becomes most important engaging the largest working population of the country (Sanyal, 1986).

The history of economic development of the developed countries like U.K., U.S.A., Japan, France, West Germany, Sweden and U.S.S.R. clearly revealed, that, there was a clear shift in the working population from primary occupation to secondary and tertiary activities (Sanyal, 1986).

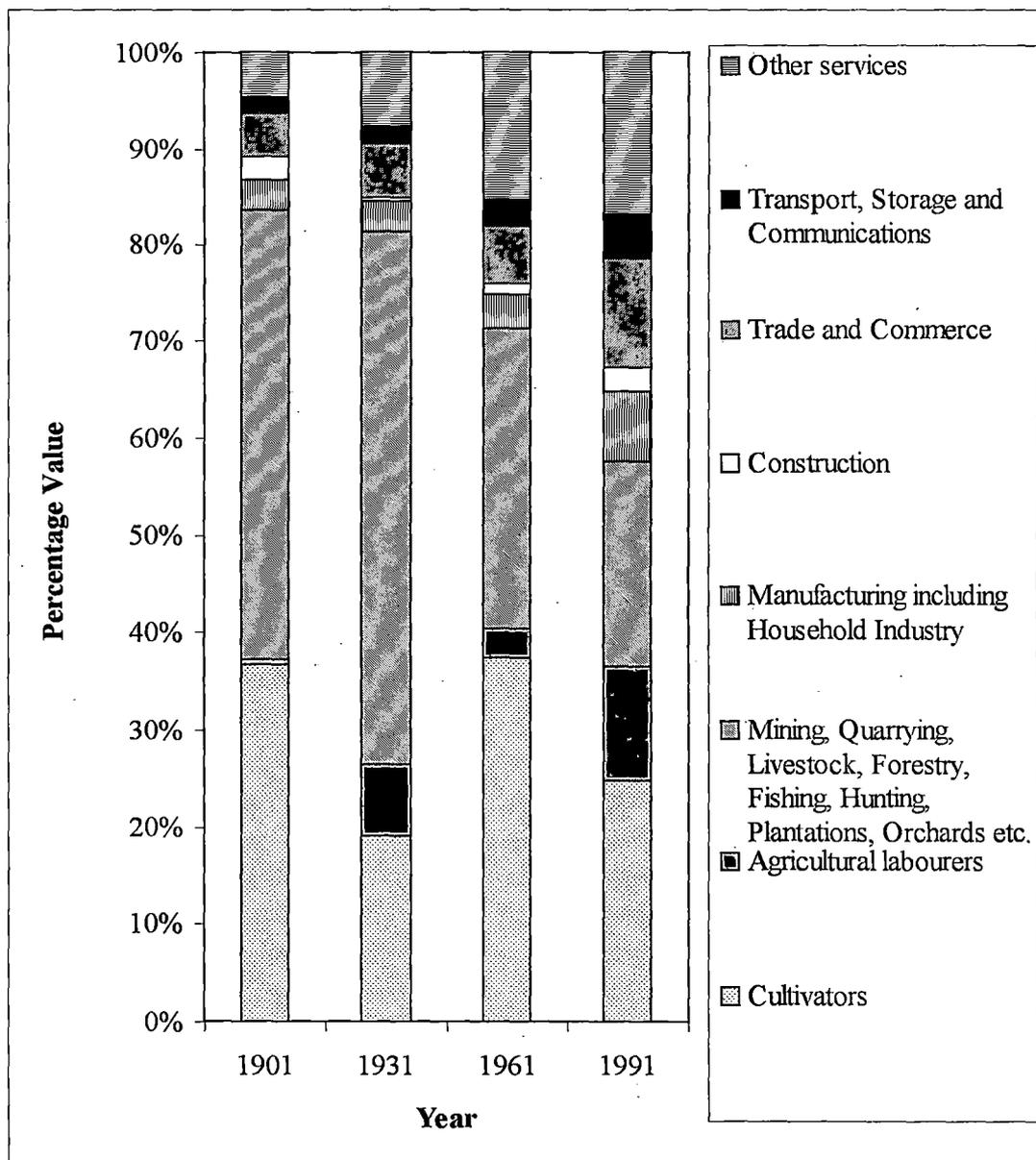
Occupational shifts experienced in the district over three generations between 1901 and 1991 are shown in the table – 5.6, in figure – 5.6 and in figure – 5.7.

**Table – 5.6: No. of Workers in Different Years (Their Percentages to Total Workers)**

Category of workers	1901	1931	1961	1991
Total workers	154489 (100.00)	122904 (100.00)	266105 (100.00)	444832 (100.00)
Cultivators	56811 (36.77)	23346 (18.99)	99703 (37.47)	110051 (24.74)
Agricultural labourers	691 (0.45)	9069 (7.38)	7807 (2.94)	52579 (11.82)
Mining, Quarrying, Livestock, Forestry, Fishing, Hunting, Plantations, Orchards, etc.	71555 (46.32)	67568 (54.98)	82236 (30.90)	93504 (21.02)
Manufacturing including Household Industry	4925 (3.19)	3838 (3.12)	9306 (3.51)	32072 (7.21)
Construction	3729 (2.41)	550 (0.45)	3160 (1.19)	10676 (2.40)
Trade and Commerce	7033 (4.55)	6781 (5.52)	15592 (5.86)	50533 (11.36)
Transport, Storage and Communications	2627 (1.70)	2423 (1.97)	7756 (2.92)	20640 (4.64)
Other services	7118 (4.61)	9329 (7.59)	40545 (15.21)	74776 (16.81)

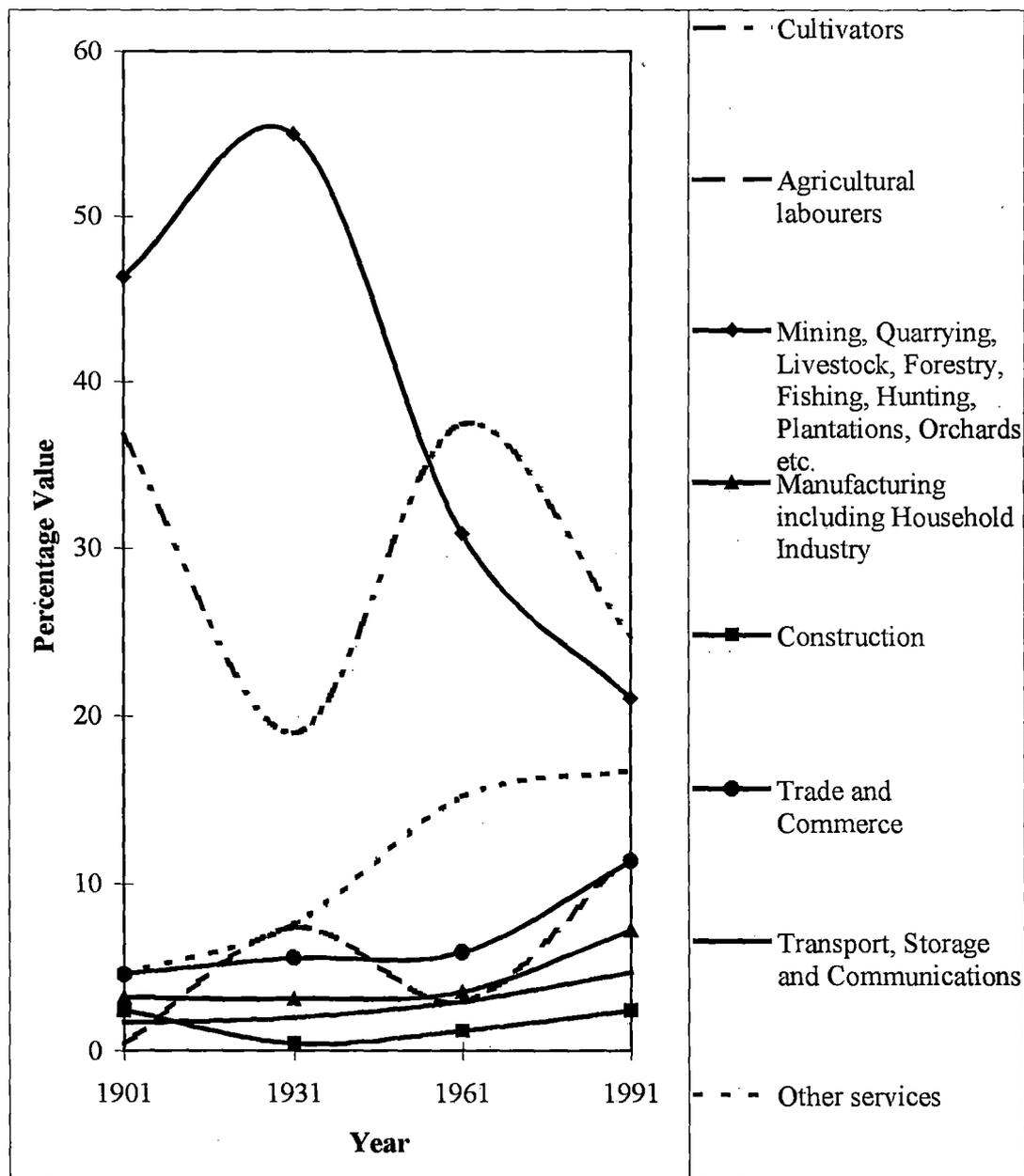
Source: Compiled by this scholar from Banerji, Amiya Kumar, et. al.: West Bengal District Gazetteers – Darjeeling, 1980 and District Census Handbook, Darjeeling, 1991

**Figure – 5.6: Percentage of Workers**



Out of the 154489 total workers in 1901, 36.77 percent are cultivators, 0.45 percent are agricultural labourers, 46.32 percent are engaged in mining, quarrying, livestock, forestry, fishing, hunting, plantations, orchards etc., 3.19 percent are engaged in manufacturing including household industry, 2.41 percent in construction works, 4.55 percent are engaged in trade and commerce, 1.7 percent in transport, storage and communications and 4.61 percent in other workers. In 1931, out of the 122904 total workers, 18.99 percent are cultivators, 7.38 percent are agricultural

**Figure – 5.7: Occupational Shifts in Different Years**



labourers, 54.98 percent are engaged in mining, quarrying, livestock, forestry, fishing, hunting, plantations, orchards etc., 3.12 percent are engaged in manufacturing including household industry, 0.45 percent are engaged in construction works, 5.52 percent are engaged in trade and commerce, 1.97 percent are engaged in transport, storage and communications and 7.59 percent are other workers. Again in 1961 the number of total workers is 266105 and in 1991 the same is 444832. In 1961 and 1991 the percentage increase in workers as cultivators is 18.48 and -12.73, as agricultural

labourers is -4.44 and 8.88, in mining, quarrying, livestock, forestry, fishing, hunting, plantations, orchards, etc. is -24.08 and -9.88, in manufacturing including household industry is 0.39 and 3.7, in construction 0.74 and 1.21, in trade and commerce is 0.34 and 5.5, in transport, storage and communications is 0.95 and 1.72 and in other services is 7.62 and 1.6 respectively.

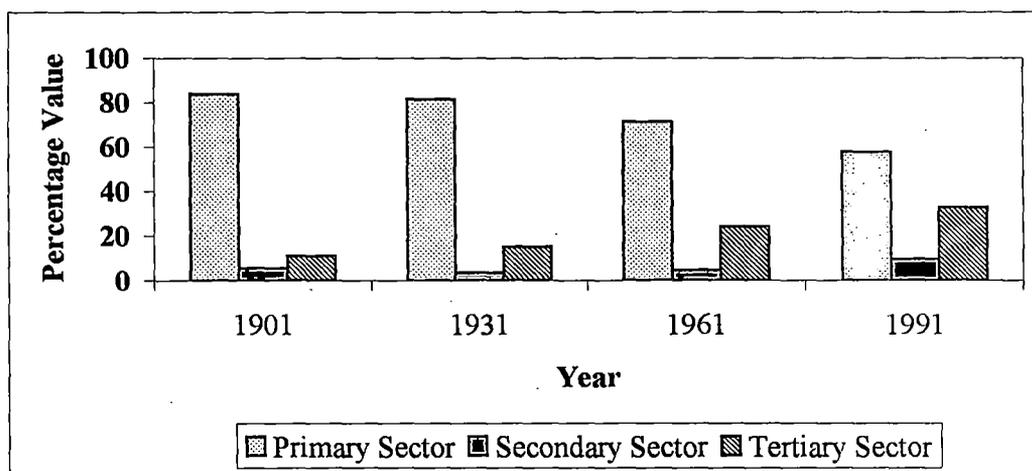
‘Service Sector’ in Darjeeling hill areas was historically associated with tea plantation and of course with different government jobs. Many head offices of the gardens were located in Darjeeling. Up to 1961 service sector was the main sector in the urban areas of Darjeeling hill areas. It is still the most important sector.

**Table – 5.7: Occupational Shifts between Different Sectors from 1901-1991**

Category of workers	1901	1931	1961	1991
Primary Sector	83.54	81.35	71.31	57.58
Secondary Sector	5.6	3.57	4.7	9.61
Tertiary Sector	10.86	15.08	23.99	32.81

Source: Compiled by this scholar from table – 5.6

**Figure – 5.8: Occupational Structure from 1901-1991**



From table – 5.7 and figure – 5.8 it is evidently clear that there is no structural change for the district’s work force. The three hill subdivisions of Darjeeling district are predominantly agricultural in character. The most important industries are based on plantation and forestry.

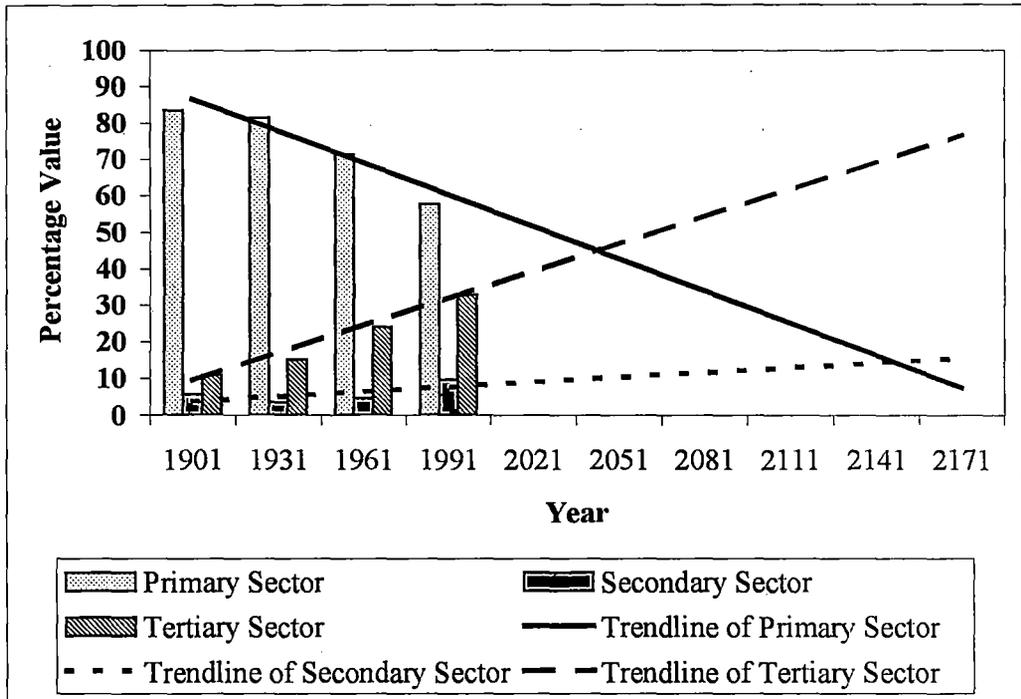
Occupational structure of working force of these regions has been studied from 1901 to 1991. The span of ninety years may be a quite good index to study the relative shift of the working force among these three sectors, i.e., primary, secondary and the tertiary. In this three hill subdivisions primary sector is the most dominant sector. Then come the tertiary and lastly the secondary one. That speaks of very low level of industrialization in this region (Sanyal, 1986).

In Darjeeling the dependency on the primary sector is gradually declining from 83.54 percent in 1901 to 57.58 percent in 1991. From 1901 to 1991 there is relative improvement in the secondary sector. In 1901 5.6 percent of the working force is coming within this sector whereas, in 1991 secondary sector absorbs 9.61 percent of the total work force. There is only 1½ times increase of work force in this sector during these ninety years duration. But remarkably according to 1931 Census only 3.57 percent of the working force is coming within this secondary sector as compared with 9.61 percent in 1991. Therefore, more than three times increase of work force in this sector during these years shows the impact of industrialization in this region. So far the tertiary sector is concerned the participation rate of the working force absorbed in this sector is gradually increased from 10.86 percent in 1901 to 32.81 percent in 1991, i.e., more than three times increase of the working force.

It can be concluded that the dependence on the primary sector is gradually declining. Over the ninety years there is a relative shift in the structure of working population from the primary to secondary and tertiary. (Sanyal, 1986)

Colin Clark has observed that during the process of economic growth there is a general tendency for tertiary industries to expand more rapidly than the secondary industries (Datt and Sundharam, 1993). The participation rate in the tertiary sector in Darjeeling is much higher than the secondary sector. These three hill subdivisions with added tourist attraction had led to the growth of allied activities that has reinforced the growth of tertiary sector (Sanyal, 1986). The growth of banking, finance, trade and commerce etc., are not only providing more employment but are generating the process of occupational shift in favour of tertiary sectors also (Datt and Sundharam, 1993).

**Figure – 5.9: Trend of Occupational Shifts in Future**



Though the primary sector in Darjeeling is now the largest sector, the tertiary sector is also growing rapidly and from the trend line depicted in figure – 5.9 it can be predicted that in the year 2036 the tertiary sector would rise above the primary sector. And that implies a definite shift will be there in occupational structure from primary sector to tertiary sector.

### 5.5 Conclusions

The definition of ‘worker’ in the different censuses is not uniform, but even then we study the trend of occupational distribution of labour force. We can conclude that, there was clear shift in the work force from the primary to the secondary and the tertiary sectors in Darjeeling since 1901. If we accept the thesis the economic development of a country is accompanied by a shift of the working population from the primary to the secondary and ultimately to the tertiary sectors, then clearly Darjeeling is on the highroad to economic progress.

## References:

Banerji, Amiya Kumar, et. al.: West Bengal District Gazetteers – Darjeeling, 1980, P – 354-355

Census of India 2001, Primary Census Abstract, Volume – I, Directorate of Census Operations, West Bengal

Datt, Ruddar and Sundharam, K. P. M.: Indian Economy, S. Chand & Company Ltd., New Delhi, 1993, P – 64-67

Jhingan M. L., et. al.: Demography, Vrinda Publications (P) Limited, Delhi, 2003, P – 208, 212-213.

Sanyal, Bikash Mohan: 'The Impact of Economic Development on Structural Composition of Working Force in Darjeeling Hill Areas', The Eastern Himalayas – Environment and Economy, Eds. R L Sarkar and Mahendra P Lama, Atma Ram & Sons, Delhi, Lucknow, 1986, P – 583-586, 588, 590, 593

# **CHAPTER VI**

## **Medical and Public Health Service**

### **■ Introduction**

### **■ Medical Facilities**

- In Early Times**
- In the British Period**
- After Independence**

### **■ Diseases Common to the District**

### **■ Vital Statistics**

- Birth and Death Rates**
- Infant Mortality**

### **■ Conclusion**

## CHAPTER VI

### Medical and Public Health Service

#### 6.1 Introduction

Health as defined by the World Health Organization, 'is a state of complete physical, mental and social well-being and not merely the absence of disease.' 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 (Mashqura and Lepcha, 2004).

#### 6.2 Medical Facilities

##### 6.2.1 In Early Times

Darjeeling with its rich herbal store had an ancient system of indigenous treatment practiced by the medicine men and herbalists of the Lepcha and other communities. It is interesting to note that a large number of local herbs have Lepcha names (Banerji, et. al., 1980).

##### 6.2.2 In the British Period

Regular medical institutions started functioning in the district towards the end of the 19<sup>th</sup> century through the assistance of govt. and of private individuals. In the town of Darjeeling there were three medical institutions – the Eden Sanatorium for Europeans, the Lowis Jubilee Sanatorium for natives and the Victoria Memorial Dispensary for natives and Europeans (Banerji, et. al., 1980).

In the interior of the hill region there were charitable dispensaries at Kurseong, Kalimpong, Pankhabari and at Pedong (Banerji, et. al., 1980).

The medical organization of government was admirably supplemented by the Church of Scotland Mission. At Kalimpong there was a hospital, the Charteris Hospital, aided by the State, but maintained and managed by the Mission, which contained twenty-six beds. The same Mission also maintained a dispensary at Nimbong in the Kalimpong subdivision. There was also a small independent medical mission at Sukhia Pokhri close to the Nepalese border (Banerji, et. al., 1980).

### 6.2.3 During Post-Independent Period

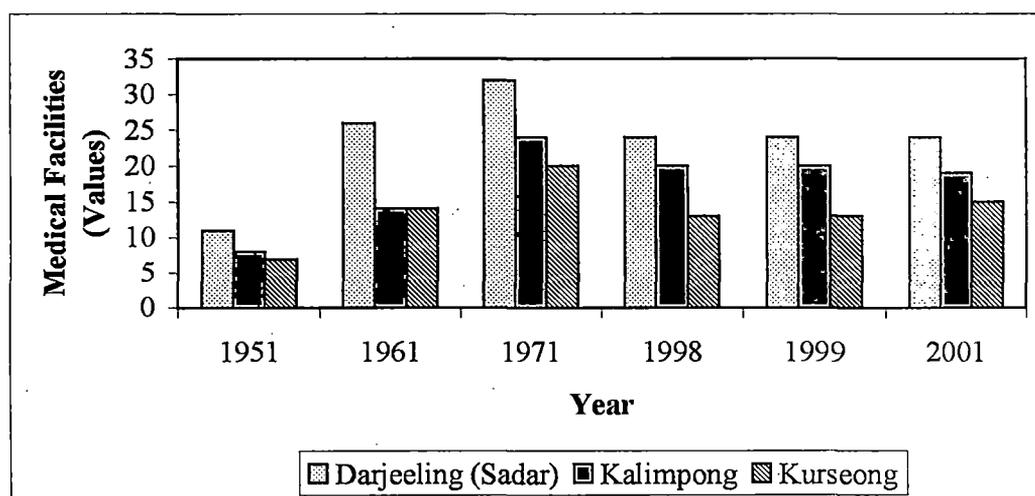
The medical facilities available in three hill subdivisions of Darjeeling district are gradually increasing after the independence. The medical facility available in the hilly district of North Bengal in the post independent period is presented in table – 6.1 and figure – 6.1 and 6.2 below.

**Table – 6.1: Medical Facilities Available in Darjeeling District and Hill Subdivisions**

Year	Darjeeling (District)	Darjeeling (Sadar)	Kalimpong	Kurseong
1951	-	11	8	7
1961	-	26	14	14
1971	-	32	24	20
1974	105	-	-	-
1998	-	24	20	13
1999	-	24	20	13
2001	88	24	19	15
2004	327	-	-	-

Source: Compiled by this scholar from District Census Handbook Darjeeling, 1951 and 1961, District Statistical Handbook, Darjeeling, 1973 and 74 Combined, 2002 and 2005 and Mashqura, Fareedi and Lepcha, Pasang Dorjee: Area and Issue Profile of Darjeeling, Darjeeling Ladenla Road Prema R. C. D. C. Hayden Hall, 2004

**Figure – 6.1: Medical Facilities Available in Three Hill Subdivisions**



**Figure – 6.2: Medical Facilities Available in Darjeeling District**

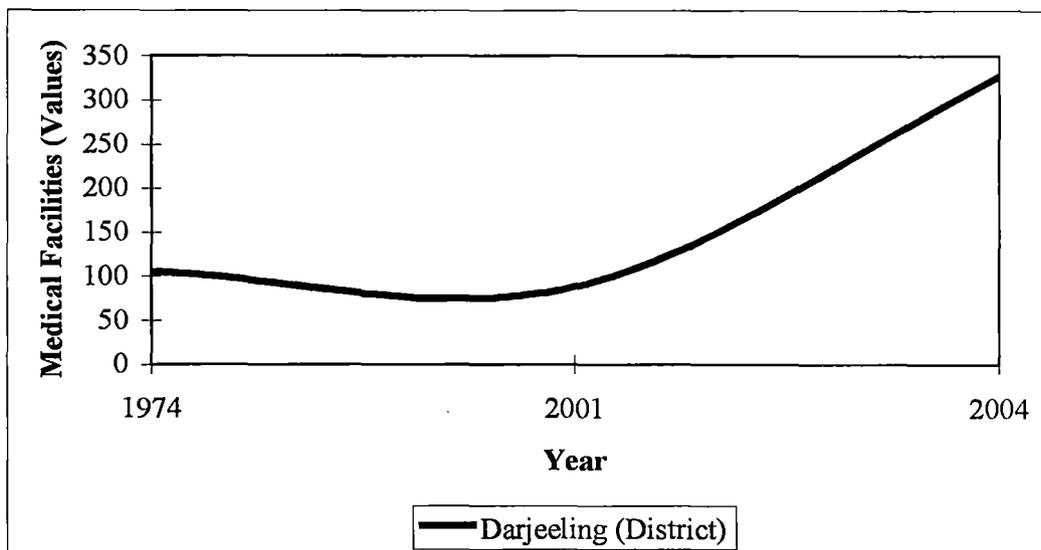


Table – 6.1 shows that between the three hill subdivisions the Sadar subdivision has greater advantages in availability of medical facilities than the two other hill subdivisions. Here medical facilities include number of hospitals, dispensaries, maternity and child welfare centres, clinics and health centres. During the fifty years from 1951 to 2001 there is more than two times increase in the availability of medical facilities in three hill subdivisions. Though during 1951-1971 there was nearly three times increase in the availability of medical facilities. But this number is gradually reduced by 25 percent during the thirty years from 1971 to 2001. Medical facilities available in Darjeeling, Kalimpong and Kurseong subdivisions during 1998-1999 have been shown district is depicted in table – 6.2.

**Table – 6.2: Medical Facilities in Three Hill Subdivisions During 1998-1999**

Subdivisions	Hospitals		Health Centre		Clinics		Dispensaries		Total		Total Beds		Doctors	
	98	99	98	99	98	99	98	99	98	99	98	99	98	99
Darjeeling	3	3	10	10	3	3	8	8	24	24	447	447	50	50
Kalimpong	2	2	9	9	1	1	8	8	20	20	540	540	44	43
Kurseong	3	3	5	5	1	1	4	4	13	13	472	472	37	36

Source: Mashqura, Fareedi and Lepcha, Pasang Dorjee: Area and Issue Profile of Darjeeling, Darjeeling Ladenla Road Prerna R. C. D. C. Hayden Hall, 2004

Table – 6.2 shows that during 1998-1999 there is no such change in the availability of medical facilities in three hill subdivisions. The total number of hospitals, health centres, clinics and dispensaries are greater in number in Sadar subdivision than Kalimpong and Kurseong subdivision. But in total number of beds Kalimpong subdivision is ahead of other hill subdivisions. Again the number of doctors in Darjeeling subdivision is greater in numbers than Kalimpong and Kurseong subdivisions. In Kalimpong and Kurseong subdivision the number of doctors has marginally decreased during 1998-1999. Patients treated in hospitals (both indoor and outdoor) during 1995-1999 in Darjeeling district have been shown in table – 6.3 and figure – 6.3.

**Table – 6.3: Patients Treated in Hospitals and Dispensaries in the District of Darjeeling**

Year	Indoor	Outdoor	Total Number
1995	44933	171021	215954
1996	45423	179118	224541
1997	46104	181804	227908
1998	77295	691950	769245
1999	74351	657842	732193

Source: Mashqura, Fareedi and Lepcha, Pasang Dorjee: Area and Issue Profile of Darjeeling, Darjeeling Ladenla Road Prerna R. C. D. C. Hayden Hall, 2004

**Figure – 6.3: Patients Treated in Hospitals and Dispensaries in the District of Darjeeling**

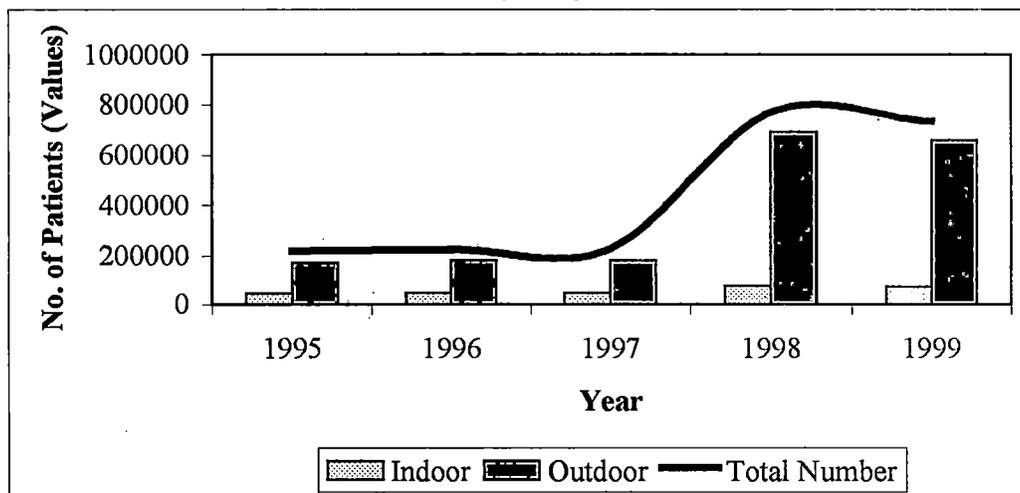


Table – 6.3 shows that during the three years from 1995 to 1997 the total number of patients treated in hospitals and dispensaries in the district of Darjeeling has gradually increased. But this number suddenly increased in 1998 and again it decreased to some extent in 1999. This trend is also observed for the indoor and outdoor patients during 1995-1999.

Darjeeling records the highest number of hospitals-beds per unit of population compared to any other districts in the State of West Bengal (Institute of Applied Manpower Research, 2002).

### **6.3 Diseases Common to the District**

In the early British period various types of fevers, especially in the Terai region, caused the greatest mortality. Regarding diseases common in the hill areas diarrhoea was one of the commonest diseases among the Europeans in the hills, especially among those who have just arrived from the plains (Banerji, et. al., 1980).

Among the hill people intestinal worms, producing symptoms of diarrhoea, were extraordinarily common; in 1905 no less than 3470 such cases were treated at the Darjeeling dispensary. Phthisis was also not uncommon among the natives, owing to their thin clothing, their constant exposure to cold, damp and heat, and to their disregard of elementary hygienic laws. Darjeeling with its cold damp climate bore an unfavourable reputation for the treatment of consumption or pulmonary affections. The frequency of goitre and deaf-mutism and diphtheria and enteric diseases were sporadic at that time while influenza visited the district only occasionally. Rheumatism was common during the rains but plague was very rare (Banerji, et. al., 1980).

Complications of pregnancy and childbirth as also chronic bronchitis, fractures and head injuries are the leading causes of admissions into hospitals, while diseases of the circulatory system and complications of pregnancy and childbirth are the worst killers. Yet maladies like malaria, tuberculosis, dysentery etc. call for special attention because of their past and present history (Banerji, et. al., 1980).

## 6.4 Vital Statistics

### 6.4.1 Birth and Death Rates

In the hills, the damp moist heat of the Terai disappears at the elevation of 2500 feet and above that level the tropical zone of fever is past. In the sub-Himalayan tract reeking moisture and rank vegetation, the average mortality was nearly 60 per thousand in the ten years ending in 1900, while it exceeded 71 per mille in that year. On the other hand, the average birth rate in the same decade was only 19.4 per annum. In 1905, the death rate was 57.70 per thousand and the average over the previous five years was 60 per thousand. Conditions are very different now. The bowel-complaints, the scourge of the hill areas, have been largely checked through modern arrangements for supply of filtered water (Banerji, et. al., 1980).

The birth and death rates as recorded during 1951-1960 has been presented in table – 6.4.

**Table – 6.4: Birth and Death Records – 1951-60**

Births and Deaths		1951-60	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
Births	Male	60959	5716	6011	5769	5621	6475	6327	6237	6433	6120	6250
	Female	58133	5521	5852	5309	5402	6101	5792	6036	6233	5757	6130
Birth Rate (a)	Male	13.26	12.44	13.08	12.55	12.23	14.09	13.77	13.57	14.00	13.32	13.60
	Female	12.65	12.01	12.73	11.55	11.75	13.27	12.60	13.13	13.56	12.53	13.34
Birth Rate (b)	Male	11.30	12.29	12.48	11.58	10.92	12.19	11.55	11.06	11.08	10.25	10.19
	Female	10.78	11.87	12.15	10.66	10.50	11.49	10.58	10.70	10.73	9.64	9.99
Female Births	Reported per 1000 Male births	953.64	965.89	973.55	920.26	961.04	942.24	915.44	967.77	968.91	940.69	980.80
Deaths	Male	30778	4207	3620	3488	3381	3030	2658	2608	2777	2413	2596
	Female	28685	4089	3340	3210	3169	2722	2399	2487	2479	2326	2464
Death Rate (c)	Male	12.47	17.15	14.67	14.14	13.70	12.28	10.77	10.57	11.25	9.77	10.52
	Female	13.48	19.21	15.69	15.08	14.89	12.79	11.27	11.68	11.65	10.93	11.57
Death Rate (d)	Male	10.63	16.85	14.00	13.05	12.24	10.63	9.05	8.62	8.92	7.53	7.89
	Female	11.46	18.98	14.97	13.91	13.29	11.06	9.45	9.51	9.21	8.40	8.66
Female Deaths	Reported per 1000 Male Deaths	932.00	971.95	922.65	920.30	937.30	898.35	902.56	953.60	892.69	963.95	949.15

Source: Ray B: Census 1961, West Bengal, District Census Handbook, Darjeeling, Bengal Government Press, 1967

Table – 6.4, (a) denotes the number of births per 1000 of total population calculated on the population at the Census of 1951, (b) denotes the number of births per 1000 of total population calculated on the estimated population on the 30<sup>th</sup> June of each year, (c) denotes the number of deaths per 1000 of the same sex calculated on the population at the Census of 1951 and (d) denotes the number of deaths per 1000 of the same sex calculated on the estimated population on the 30<sup>th</sup> June of each year (Ray, 1967). This table shows that the rate of female births had increased by 27.16 per 1000 male births. This table as well shows that the rate of female deaths had also increased by 17.15 per 1000 male deaths.

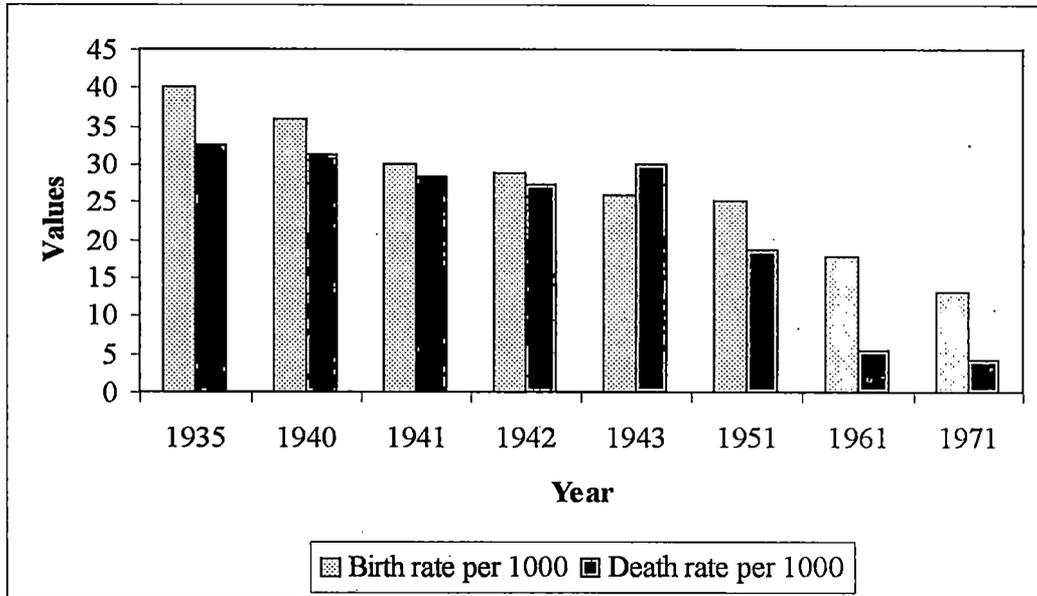
While total demographic mobility in a given area is governed both by internal and external factors, birth and death rates can be more precisely attributed to internal factors alone.

**Table – 6.5: Birth Rate and Death Rate in Darjeeling District: 1941-1971**

Year	Births	Birth rate per 1000	Deaths	Death rate per 1000
1935	12,819	40.15	10399	32.53
1940	11,489	35.94	9995	31.26
1941	11329	30.0	10717	28.4
1942	10,808	28.72	10273	27.28
1943	9,688	25.72	11258	29.89
1951	11237	25.2	8296	18.6
1961	11059	17.6	3427	5.5
1971	-	13.1	-	4.1

Source: Compiled by this scholar from Dash, A J: Bengal District Gazetteers – Darjeeling, Bengal Government Press, 1947, Banerji, Amiya Kumar, et. al.: West Bengal District Gazetteers – Darjeeling, 1980 and District Statistical Handbook, Darjeeling, 1973 and 1974 Combined, Bureau of Applied Economics and Statistics, Government of West Bengal

**Figure – 6.4: Birth Rate and Death Rate in Darjeeling District**



From the table – 6.5 it is seen at once that birth and death rates in 1941 and 1942 moved close together while there was a progressive and very significant gap between them in 1935, 1940, 1951, 1961 and 1971, though in 1943 the death rate rose above the birth rate. During the thirty-six years from 1935 to 1971 the birth rate decreased about 27.05 per 1000. During the seven years from 1935 to 1942 the death rate decreased about 5.25 per 1000. But during 1942-1943 the death rate increased about 2.61 per 1000. Again during the twenty-eight years from 1943 to 1971 the death rate decreased about 25.79 per 1000. It will also be noticed that while the birth rate came down at a slower pace the decrease in the death rate was very pronounced, presumably due to better health and sanitation measure (Banerji, et. al., 1980). The trend in birth rate and death rate in Darjeeling district is depicted in figure – 6.4.

The male life expectancy rate in Darjeeling in 2001 was 67 and the female life expectancy rate in this district in 2001 was 71.

#### **6.4.2 Infant Mortality**

In Darjeeling, as elsewhere, children constitute the largest single component of the total population. Because of their physical immaturity and large numbers, children are more prone to disease and death than those in the higher age group. The following

table brings out the relative proportions between total deaths and infant mortality in the district for the period 1951-60 (Banerji, et. al., 1980).

**Table – 6.6: Infant Mortality in Darjeeling District: 1951-60**

Year	Total Deaths	Infant Deaths	Infant Death Rate Per Thousand
1951	8296	1088	96.82
1952	6960	1114	93.91
1953	6698	1076	97.13
1954	6550	1078	97.80
1955	5752	880	69.97
1956	5057	769	63.45
1957	5095	886	72.19
1958	5256	1010	79.74
1959	4739	729	61.38
1960	5060	785	63.41

Source: Banerji, Amiya Kumar, et. al.: West Bengal District Gazetteers – Darjeeling, 1980

**Figure – 6.5: Infant Mortality in Darjeeling District: 1951-60**

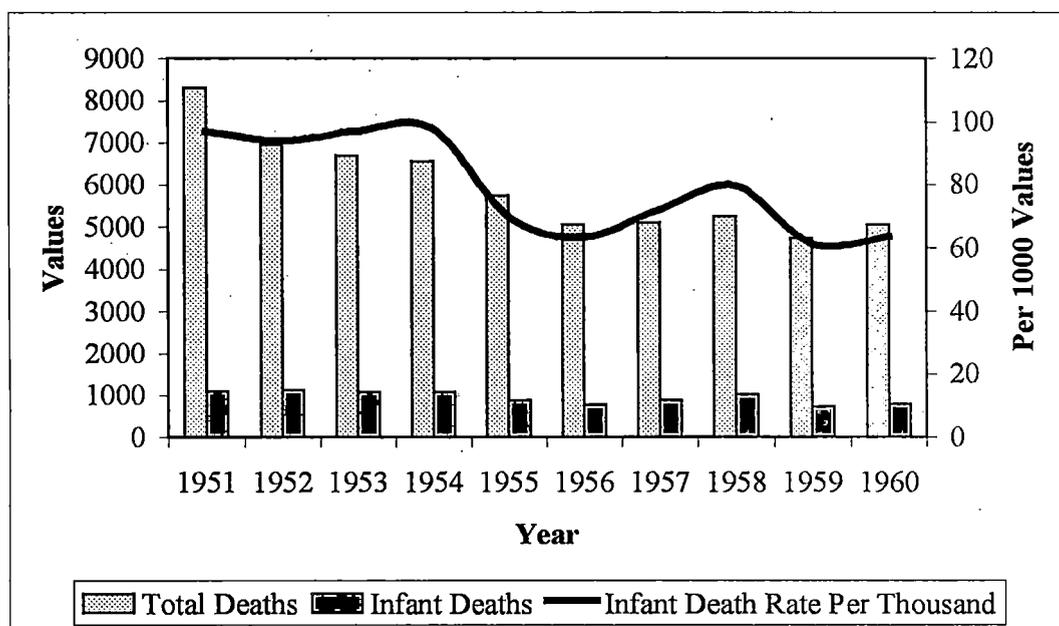


Table – 6.6 shows that during the ten years from 1951 to 1960 the infant mortality rate decreased by 33.41 per thousand. During 1951-1954 the same rate increased by 0.98 per thousand. During 1954-1956 this rate decreased by 34.35 per thousand. During 1956-1958 the infant mortality rate was again increased by 16.29 per thousand. But during 1958-1959 this rate decreased by 18.36 per thousand. And during 1959-1960 the infant mortality rate had increased by 2.03 per thousand. Infant mortality in Darjeeling district from 1950 to 1960 is depicted in figure – 6.5.

In the year 1974 the infant mortality rate per thousand live births was 44.6 (District Statistical Handbook, Darjeeling, 1973 and 1974). It may be noted that relative deprivation in infant survival rate increased in the case of Darjeeling district of North Bengal during 1981-91. In the year 1981 the deprivation index of infant survival for the district of Darjeeling was 0.310 and in the year 1991 the deprivation index of infant survival for the district of Darjeeling was 0.760 (Institute of Applied Manpower Research, 2002). The male infant mortality rate in 2001 was 39 and the female infant mortality rate was 43 in 2001.

## **6.5 Conclusion**

Medical facilities enjoyed by the people of the district have always been relatively greater than those available in other districts of West Bengal (except Calcutta), mainly because a number of hospitals and dispensaries run by different religious missions, municipalities and private organizations have long been functioning here. These are now supplemented by hospitals, dispensaries and clinics set up by the State Government according to the usual pattern obtaining in other districts as also by departmental hospitals attached to railways, jails, police organizations etc (Banerji, et. al., 1980).

According to the West Bengal Human Development Report 2004 the health index of Darjeeling was 0.73 and the human development index was 0.65. The human development index rank of this district was 4. Again the gender development index of the district of Darjeeling was 0.60 and the gender development index rank was 2.

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## **CHAPTER VII**

### **Impact on Environment Due to the Population Growth**

- **Introduction**
  
- **Causes of Ecological Imbalance**
  - **Natural Erosion**
  - **Deforestation**
  - **Tourism**
    - **Environmental Problems**
    - **Plant Destruction**
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## CHAPTER VII

### Impact on Environment Due to the Population Growth

#### 7.1 Introduction

The Himalayan mountains have held a long history of appeal to the outside world, and rightfully so. From ancient times it has been revered for its snow-capped mountain peaks and the unfathomable depths of its ravines and valleys. Many of the rivers, such as the Ganga and Jamuna, are held sacred and have inspired myths and legends. The Himalayas have remained the centre for dispersing two great religions of the world – Hinduism and Buddhism. The exchanges between the peoples of the Himalayas, from China to Tibet, have produced wonderful cultures, rich art, science, and literature. The Himalayan Mountains seem like an endless opportunity for exploration – each range with its own characteristics which make one's heart burn with the passion of discovery. Unfortunately, the mix of nature and nature-lovers does not always result in nature preservation.

Mountains provide a substantial portion of the world's timber and minerals, and mountain peoples' environmental services are critical to the sustainability of their lowland 'plains'. They shelter over half of the world's biodiversity and nurture rich and varied cultures that have much to teach the rest of the world about sustainability and natural resource management (Bhargava, 2003).

Agricultural potential in mountains is limited by the small size of arable plots, climatic variability, and more difficult growing conditions, typically including shorter growing seasons due to altitude. These areas are unlikely to be as productive of basic food crops as lowland areas, contributing to higher levels of poverty in mountains (Bhargava, 2003).

The Himalayan mountain range in India is one of the most beautiful ecological wonders in the world. At the same time, it is one of the most threatened. Darjeeling has a wide and varied forest cover with a large variety of flora and fauna (Chakrabarti, 2007). Increasing numbers of mountaineers, trekkers, and nature-lovers have been making the annual pilgrimage to these mountains in such volume that the environment's natural equilibrium is in jeopardy. Roads have replaced trees, campsites

have replaced meadows – the sign of visitation is everywhere through a trail of non-recyclable rubbish. Wildlife has been squeezed into remote and often desolate areas to escape the influx of humans and to search for a better source of food within a disrupted food-chain ecosystem. National and local government need these foreign tourists in order to support the economy, however it is obvious that at the present rate of destruction, the longevity of the tourism sector will in itself be compromised.

## **7.2 Causes of Ecological Imbalance**

Himalayan adaptations provide sustainable subsistence under difficult conditions, but cash wages in the region are low and there is little opportunity to break out of traditional occupations. The main development efforts have focused on industrialization, agriculture and tourism. Benefits have accrued mainly to the governments and well-funded businessmen from outside the area. Costs have been increasing pollution and marked decreases of forest, resulting in increased run off, siltation of rivers and probably landslides (Krech, McNeill and Merchant, 2004).

When man caused damage to the basic natural resources necessary for survival, i.e., water, soil, forests, the atmosphere, etc, then it is called Environmental Degradation (Chitkara, 1998). Some believe that economic forces are at the root of environmental degradation. Economic activity affects the environment in diverse ways. In producing and consuming goods and services, societies draw materials and energy from the environment, adversely affecting the diversity of flora and fauna inhabiting both land and water. Some of these modifications of our natural environment are intentional, such as those achieved through processes of agriculture, urbanization and the development of social infrastructure, such as roads, factories, dams and power plants. Other environmental impacts are incidental and most often unintentional by-products of economic activity. This includes discharge of waste from industry and domestic living and spill over effects of urbanization and population growth (Bhattacharya, 2006).

One effective and important way to control air pollution is raising of protective plantations or shelter belts for air purification. Plants absorb carbon dioxide and release oxygen during the process of photosynthesis. This oxygen is responsible for purifying the air. Besides certain plants absorb specific air pollutants viz.,

hydrogen fluoride, sulphur dioxide and nitrogen oxide. Least absorbed pollutant is carbon monoxide. In case of particulate pollutants such as sand, dust, pollen, smoke etc., surface of leaves, branches, stems act as a trap. Trees have more humidity around them and hence the suspended particle settles quickly on trees raised in the surroundings of the factories or long un-metalled roads (Mathur and Soni, 1990).

### **7.2.1 Natural Erosion**

Within this diverse terrain, land resources are exposed to the hazards of erosion along the south and southeastern faces, being directly exposed to full force of southwestern monsoon. Steep gradients of the hill slope create ideal conditions for soil wash and rapid depletion of land resources. The southeastern face of the Singalila, the southern face of Ghum, the southeastern face of Senchal-Mahaldiram and the southern face of Kalimpong hill are there by exposed to the danger of soil erosion, and as such susceptible to the decay of land resources even with slight disturbance of the natural environment (Lama and Sarkar, 1986).

### **7.2.2 Deforestation**

In 1835 Darjeeling was covered with forest, communication was poor and the population only about 100. The population thence forward increased rapidly, the main causes of which have been discussed already. Whatever the reasons, the local ecology was disturbed more and more by deforestation, construction of roads and railway and the increasing population itself. With the phenomenal increase of the population, which has taken place, and with the establishment of the tea industry, it was necessary to clear the land in order to support the people and to allow of the cultivation of the tea plant. The result has been that, within certain limits, the forests have yielded to the plough and settled cultivation, and that elsewhere they have been ruthlessly swept away by the planter (O'Malley, 1907). However, the British were not totally oblivious of the ecological disbalance and, in fact they did many things to maintain it. A mixed forest was encouraged by them and vehicles weighing more than one tonne were not allowed to ply on the hill roads. Thus the ecological niche was not allowed to be dismantled completely (Subba, 1985).

Shifting cultivation or Jhuming is practised extensively in the northeastern Himalayan zone. Under the original form, the fallow period allowed for natural regeneration of the fertility used to be minimum twenty years. However, today mainly due to population pressure it has been reduced to only two to three years. This practice that involves both misuse and mismanagement of the land is causing a serious degradation of both land and water through erosion and run off and thus be discouraged. This requires educating people about the suicidal harms that the Jhum is causing (Rawat, 1993).

It is mainly after independence that the ecological set up ruthlessly deteriorated. In the meantime the population also increased which led to further plundering of the forests (Subba, 1985). Demographic pressure leads to encroachment on forest and pasturelands, and puts immense burdens on forest reserves, which have to sustain both timber and fuel-wood requirements (Chakrabarti, 2007).

The wholesale clearance of forest is extremely dangerous in a land of steep valleys like Darjeeling. In fact, in large areas the slopes cannot maintain themselves unless they are protected by trees, shrubs and undergrowth. On steep slopes, if the foot of the hill once slips away, the slope becomes still steeper, and the hill does not lie at a natural angle of repose (O'Malley, 1907). Nature will then continue the wash-down from above until the natural angle is obtained. This process may last a century or more.

The immediate effect of pervasive poverty is the depletion of forest and forest resources. Survival needs of the impoverished rural communities often lead to human entry into forests, and illegal felling and timber-smuggling, resulting in rapid decline of forest cover which aggravates soil erosion and other environmental problems. Besides the rural need for fuel and fodder, wood-demands from urban areas and the plains have also been an important factor in the forest loss in the Himalayas. Along with all these factors, corruption and mismanagement of forests by the Forest Department can also be made responsible for the rapid loss of forest cover in the hills (Chakrabarti, 2007).

The destruction of forests has caused three-fold damages on the environment – soil erosion, changing weather conditions (rainfall, temperature, etc.) and loss of bio-

diversity. Over the years it has been found that the average rainfall in the hill has fallen while the mean temperature has gone up (Chakrabarti, 2007). Bio-diversity is being threatened due to biotic interference and changing weather conditions.

Soil erosion is a regular feature in the district, mainly due to deforestation, defective cultivation practices and the cropping pattern. In the hilly areas of the north, erosion occurs mainly in the form of landslides. No year passes without landslides occurring to a greater or smaller extent in these hills. They would have been far more numerous and serious if the hills were completely laid bare of trees. The trees in the forest not only cover the soil and hold the force of the torrential rain but their roots bind the soil and keep it porous thus allowing the droppings from the crown slowly to percolate and feed the springs continuously. Where there are no trees, rainwater strikes the ground directly and quickly rushes down the slope. The soil gets hardened, the springs cannot be fed due to lack of seepage and consequently dry up as soon the rains are over. The woodcutter on the hill hardly realizes the effect of felling trees and laying bare the hill slopes. And the presence of large trees does not necessarily provide protection against erosion. Indeed a forest consisting of large trees only with no undergrowth and little soil may actually help erosion by guiding the rainfall along definite channels (Dash, 1947). It is an unfortunate fact that although the destruction of a forest and of the resultant soil covering can be brought about comparatively easily and quickly, the re-establishment of a forest on such eroded land and the formation of a depth of soil sufficient to give adequate protection must take many years to accomplish. The district of Darjeeling have 35.3 percent of degraded non-forest lands (West Bengal Human Development Report, 2004).

Excessive cutting of fodder has not only seriously affected the natural recruitment of all forest species, but its continual operation has also reduced the soil cover to the minimum in several places (Mitra, 1954).

The town of Darjeeling and surrounding region continues to face deforestation due to increasing demand for fuel wood and timber. Local coniferous and oak forests yield valuable timber. Table – 7.1 represents the total forest cover as well as their classification in acres.

**Table – 7.1: Classification of Forest Area (in Acres)**

Year	Reserved Forests	Protected Forests	Total
1950-51	289212	543	312155
1954-55	288427	543	311901
1958-59	288319	3634	314909
1969-70	116168.29	1681.73	128097.8
1973-74	116255	1650	128263
1997-98	102807.33	40	103677.33
2000-01	102807.33	40	103677.33
2004-05	104373	1752.3	111885.17

Source: Ray B: Census 1961, West Bengal, District Census Handbook, Darjeeling, Bengal Government Press, 1967 and District Statistical Handbook 1973-74, 2002, 2005, Darjeeling, Bureau of Applied Economics and Statistics, Govt. of West Bengal

From the above-mentioned table – 7.1 we can see that between 1950 and 2005 Darjeeling’s reserved forest area diminished by 184839 acres, protected forest area increased by 1209.3 acres and total forest area diminished by 200269.83 acres. These are shown in figures – 7.1, 7.2 and 7.3. The diminishing trend in forest areas is depicted in figure – 7.4.

**Figure – 7.1**

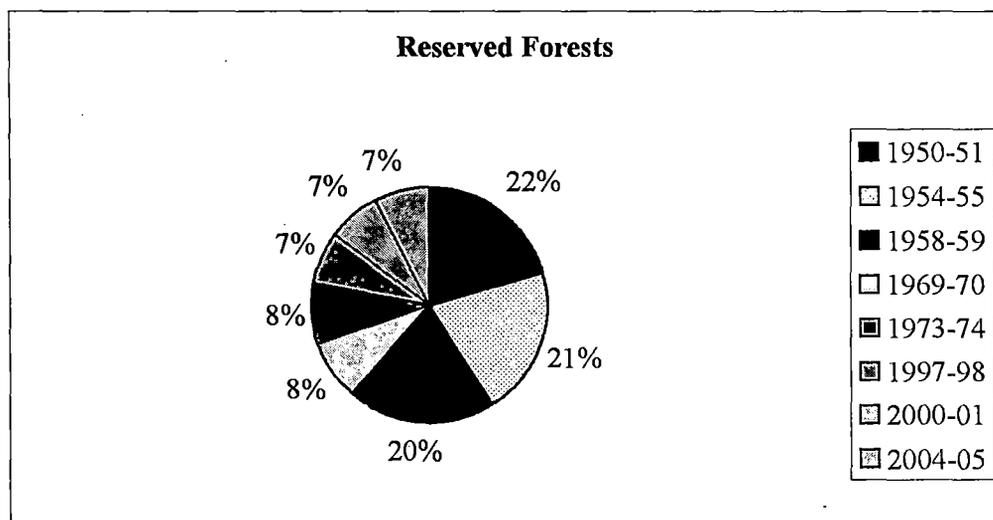


Figure – 7.2

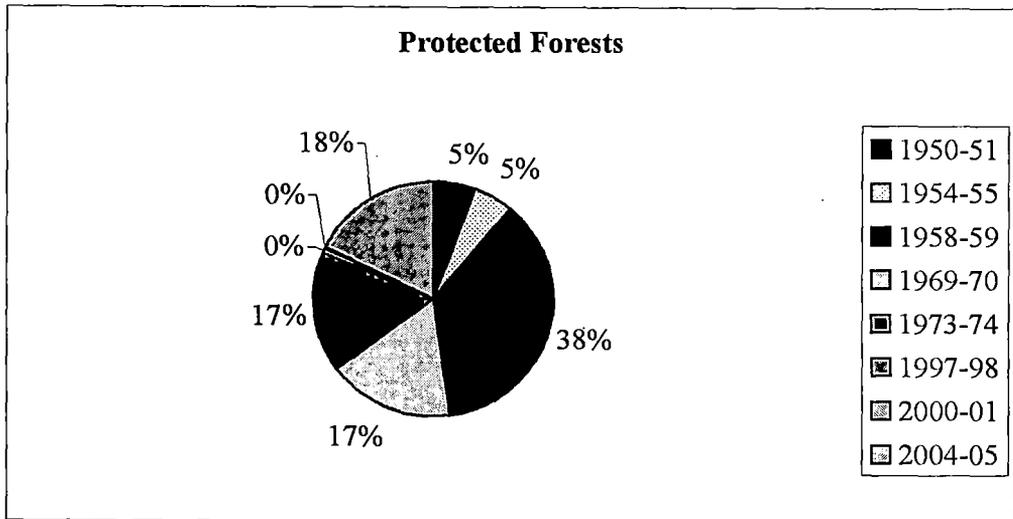


Figure – 7.3

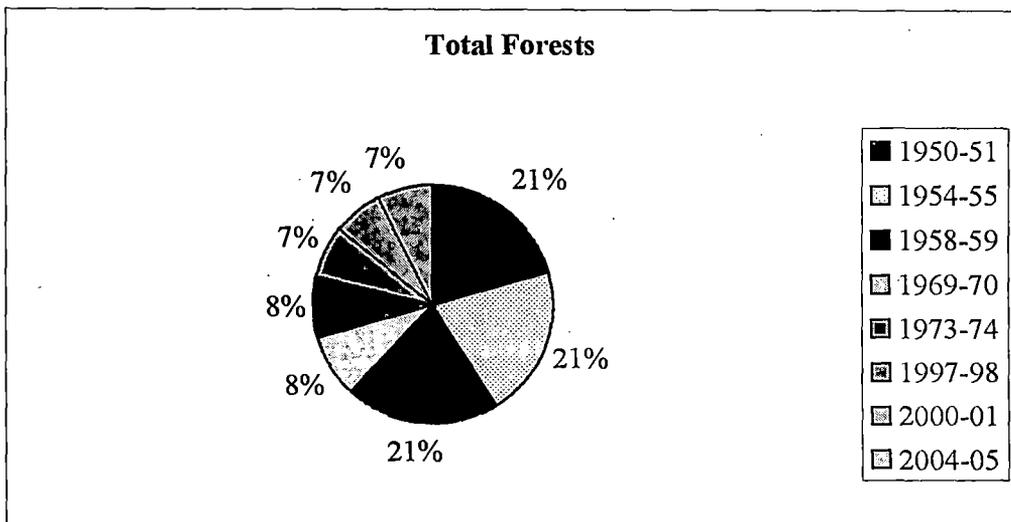
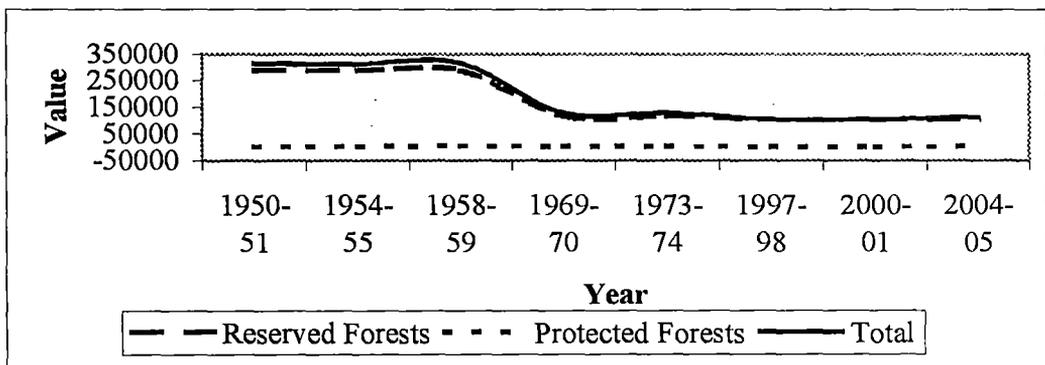


Figure – 7.4: Diminishing Trend of Forest Areas



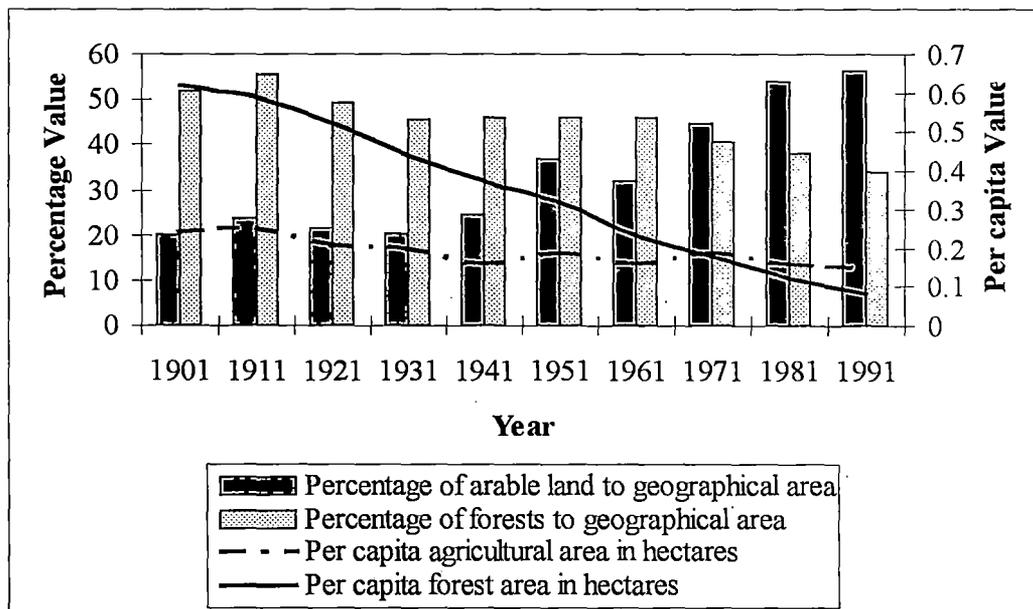
**Table – 7.2: Land-use Statistics of Darjeeling District**

Year	Percentage of arable land to geographical area	Area under forest	Percentage of forests to geographical area	Other lands and water bodies	Per capita agricultural area in hectares	Per capita forest area in hectares
1901	19.76	1554	51.54	865	0.24	0.62
1911	23.45	1554	55.55	754	0.25	0.59
1921	21.39	1481	49.14	889	0.21	0.52
1931	20.38	1427	45.46	1072	0.20	0.44
1941	24.50	1414	45.81	917	0.16	0.37
1951	36.67	1430	46.01	538	0.19	0.32
1961	31.92	1432	46.07	684	0.16	0.23
1971	44.51	1372	40.73	-	0.19	0.18
1981	53.61	1204	38.23	-	0.16	0.12
1991	56.41	1155	34.12	-	0.15	0.08

Source: Banerji, Amiya Kumar, et. al.: West Bengal District Gazetteers – Darjeeling, 1980 and Forest Directorate, Govt. of West Bengal

The land-use statistics of Darjeeling district has been represented in table – 7.2 while the trend of land-use of the same district has been shown in figure – 7.5. Between 1901 and 1931 Darjeeling’s forest area diminished by 127 sq. km. or by 6.08 percent, whereas its arable land increased by 0.62 percent of its geographical area. Again between 1931 and 1961 Darjeeling’s forest area diminished by 5 sq. km. or by 0.61 percent, whereas its arable land increased by 11.54 percent of its geographical area. And between 1961 and 1991 Darjeeling’s forest area diminished by 277 sq. km. or by 11.95 percent, whereas its arable land increased by 24.49 percent of its geographical area. Due to a higher rate of population increase, the per capita agricultural and forest areas have shown a sharp decline.

**Figure – 7.5: Trend of Land-use in Darjeeling District**



### 7.2.3 Tourism

In India, the tradition of tourism is as old as its holy scriptures (Yadav, 2002). Tourism has far-reaching significance and implications of a socio-economic nature alongside the environmental ones. Tourism always has pre-eminent impact on the environment and ecology – positive and/or negative. Alternatively, tourism development often being a major cause of ‘environmental deterioration’ is also an effect of the ‘environment conservation’ (Kamra, 2001).

#### 7.2.3.1 Environmental Problems

The huge influx of tourists has brought serious damages of the ecosystem of the Himalayan region, natural beauty and scenery. The network mechanism of road system, construction of lodges, cottages etc. has eroded many forest areas in Himalayas which result floods and droughts, flash floods, landslides, failure of hill slopes, climatic changes, soil erosion and sedimentation of lakes. Due to lack of electricity, people use diesel generator, which create air and noise pollution (Yadav, 2002).

Tourism poses problems in the mountains. There are too many people at a time/ place that it is hard to sustain the activity wholesomely, resulting in some injury

to the fragile environment. The concepts of threshold and carrying capacity may be an academic exercise in other resilient ecosystems; it is highly relevant to the holistic development of tourism in the mountain regions, particularly the high mountain regions with meagre capacity to absorb touristic activity (Singh, et. al., 1992).

The Himalayas offer wonderful opportunities for those who strive on conquering new heights. This spirit of conquest and adventure has been turned into a routine sport by the organizing of increased numbers of mountain expeditions. However, these mountaineers rarely venture up the peaks by the few; rather, they enlist large numbers of local porters to carry week's worth of supplies and provisions. In turn, these porters enlist their local goats, sheep, and donkeys to carry the bulk of these supplies, which results in the small original mountaineering party turning into a massive entourage of man and animal. To keep warm, the mountaineers depend on burning firewood, which results in the areas surrounding the mountain trails being barren of trees and timber. While the porters are busy chopping down trees and brush, their domestic animals are busy overgrazing on vegetation. These actions often lead to soil erosion and potentially lead to landslides. The average Himalayan mountaineer is said to stay on the peaks 20-30 days, and when he descends from the mountains he is often without the non-degradable provisions that he had originally started out with. Besides carrying canned goods, mountaineers often travel with and leave behind gas cylinders, carbon tetrachloride bottles, and first aid medicines.

Although the potential for a faster rate of destruction of the Himalayan Mountains is directly correlated to the amount of tourists trekking there, overall, the nation is still actively promoting the expansion of the tourism industry due to the developmental benefits of hard currency. The government has liberalized foreign investment regulations in the hotel and airline sector to stimulate the sector's growth. The government's awareness of the environmental impacts of tourism is filtered, and often obscured by the burden of developing the nation.

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. 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 (Mashqura and Lepcha, 2004).

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 materials 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 (Mashqura and Lepcha, 2004).

Bureaucratic resource managers grew euphoric on tourists' boom, fatally ignoring the boomerang-behaviour of tourism, particularly when 'problem of peaking' creates environmental pollution besides crisis in resource supply. The supply being more or less the same, demand motivations had almost reversed. Overcrowding, congestion, traffic snarls and environmental pollution hastened capacity strains on the ecosystem that had to bear the burden of fast growing resident population (Rawat, 1993).

#### **7.2.3.2 Plant Destruction**

Another problem associated with tourist activity is the collection of flowers and plants by tourists. It is hard to blame the tourists, because many visitors are so intrigued with the vast array of beautiful species that they pluck as many as possible out of fascination or for scientific collection and study (Singh, 1989).

### **7.2.3.3 Economical Impact**

The positive impacts of economic significance are that the revenues earned through the multiplier effects of the tourist trade have a direct effect on the regional economy of the Himalayan region. There are links between the trades directly involved in the tourism and those trade and industries, which supply the tourist trade with goods and services. It has brought infrastructure improvements in the form of electricity, water supply, drainage, sewage transport network, road construction; tourist based industries etc. and thus helped regional development. The multiplier effect of the growing trade and tourist expenditure has stimulated the economic activities and their diversification in the remote areas. The tourist industry being a labour intensive service industry is a valuable generator of employment, hence it is a great encouragement to economic growth and development in the Himalayan region (Yadav, 2002).

### **7.2.4 Road Construction**

Considered the youngest mountain ranges in the world, the Himalayas have only become accessible due to rapid construction of rural roads. Increased tourism in the Himalayan Mountains has led to rapid road construction to the villages closest to the major attraction sites. This will bring many benefits to the people of these towns and villages, due to their increased access to and with the more developed cities. However, the building of roads often involves the felling of a great number of trees, which are vital to the soil integrity of most hilltops and mountain ranges. Landslides will have the potential to occur more frequently. If roads are constructed to these rural towns without a proportional amount of infrastructure development, it will result in environmental and commodity resources scarcity, as more people are competing for the same quantities of basic supplies. More roads must be accompanied by greater village and town infrastructure so that basic resources such as clean water, milk, food, and firewood are not overused and depleted.

#### **7.2.4.1 Ecological Impacts**

The road construction activities are not only boon to the hill people but they disturb the hill ecology and environments unless precautions are taken to ensure that these facilities are created without damage to hillsides, slopes, forests fields, grasslands and human settlement. Unplanned and unscientific construction of roads leads to destruction of local fauna and flora and damage to soil and water regimes (Yadav, 2002).

#### **7.2.4.2 Geological Disturbance**

The road construction activity in hills, particularly operations of blasting which create geological disturbance in the hill side, as the blasting operation sets in dynamic forces causing activation of slip zones, cracks, fissures, resulting in creep and subsidence in land mass. Due to this disturbing effect, activation of large landslides has been seen in the entire Himalayan region, where roads were earlier constructed. These result in exposure of the rock fissures and faults which were earlier covered, after this exposure, the water seepage increases and creates further, instability in the hill mass (Yadav, 2002).

#### **7.2.4.3 Interruption in the Natural Drainage System**

The run off from the hill slope is uniformly disturbed cover to entire hill slope but it gets concentrated at the points where cross drainage works are provided in the road. The cross drainage works are often located without considering the adverse soil erosion, likely to be caused by the flow on the loose or soft hillside on the slope below the road alignment. The debris from the hillside cutting and land slides some times block certain channels and streams resulting in further problem (Yadav, 2002).

#### **7.2.4.4 Siltation of Lakes and Rivers**

The debris from the hill cutting goes down the hill slopes along with run off water and eventually in the rivers. When the rivers reach the foothills, the velocity of water is reduced and the water cannot carry the same silt load, which gets deposited. This silting results in a loss of capacity of reservoirs constructed at foothills for irrigation and power generation. Down below in the plain, the velocity goes down

further resulting in rise in riverbeds, which results in higher flood levels and consequent problem (Yadav, 2002).

#### **7.2.4.5 Loss of Forestry and Vegetation**

The pre-requisite of any road construction activity in the felling of trees standing on the alignment of roads. In some cases trees were axed down not only in the portion in which hill cutting is to be done but in the entire road side land, besides this large number of trees get uprooted either by felling of debris on the hill side below the road alignment or by land slides occurring after the hill cutting. The vegetation covering the hill slopes also gets eroded in the process which leads to further soil erosion as well as increased in run off from the hill slopes (Yadav, 2002).

#### **7.2.4.6 Loss of Natural Sources of Water and Springs**

The hill cutting for any road exposes hill side which lead to greater evaporation of water from hill mass and the debris of construction, some times blocks the natural springs existing immediately below the road alignment (Yadav, 2002).

#### **7.2.5 Urbanization**

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. The term 'carrying capacity' refers to the number of people the earth can support. Logically, population growth must stop at some point, or the earth would become overcrowded and its resources eventually would be depleted. 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 (Mashqura and Lepcha, 2004). Population in the town now exceeds one lakh and its pressures already exceed urban carrying capacity. For water supply, the town

depends almost entirely on the Senchal lakes, which lack the capacity to provide even the volumetric water requirements of the local population. Urban development of the pattern followed by Darjeeling town in recent years can hardly be sustainable from the standpoint of the local people (Chakrabarti, 2007).

#### **7.2.6 Chemical Pollution**

Agriculture and tea are the two important sources of livelihood of the local people. These two sectors however pose a serious threat to sustainable development in hill areas. The high use of pesticides in tea industry has a direct impact on other flora and fauna, and affects the local eco-system adversely. In the same way, the use of chemical fertilizers and pesticides in agricultural and horticultural fields destroys the microorganisms in soil and has had a negative impact on environment. Chemical pollution is therefore an important factor leading to environmental degradation in Darjeeling Himalaya (Chakrabarti, 2007).

#### **7.2.7 Automobile Emission**

Due to tourist influx, it has been found that automobile emission is higher in mountain communities due to high altitude and slower speed. Air quantities have been found ten times more fragile. High rate of automobile emission from different types of vehicles during peak flow of tourists have degraded the air quality, which is one of the major environmental impact (Yadav, 2002).

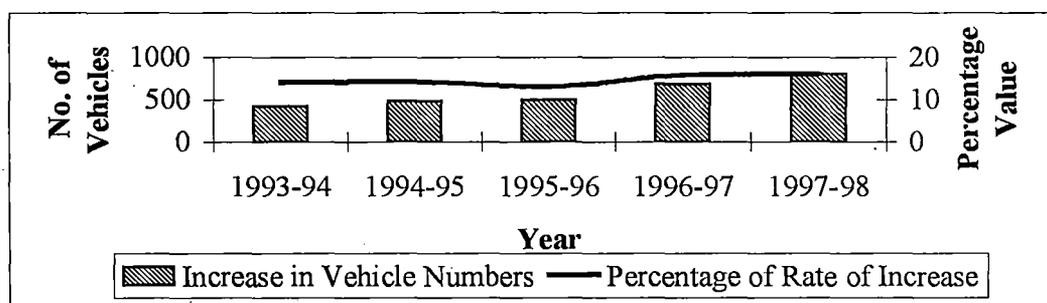
Darjeeling has witnessed a sudden growth in the number of Taxis/ Vehicles, which is now posing a major threat to the health and environment of the people in terms of vehicular pollution and accidents on roads. The growth of motor vehicles has been shown in table – 7.3 and in figure – 7.6.

**Table – 7.3: Growth Trend in Motor Vehicle Registrations in the Darjeeling Hills**

Year	Increase in Vehicle Numbers	Percentage of Rate of Increase
1993-94	415	14.00
1994-95	480	14.20
1995-96	500	13.00
1996-97	680	15.60
1997-98	800	15.90

Source: RTO, Darjeeling Administration

**Figure – 7.6: Growth Trend in Motor Vehicle Registrations in the Darjeeling Hills**



### 7.3 Conclusions

Uses of lands and resources are being modified in the expectation of continued population growth, industrial expansion, and accelerating technological change. Yet it is possible that, in the future, uses of lands and resources will take place in times of population stability, little industrial expansion, and a technology directed toward reorganization and a rearrangement of activities to achieve a better environmental relationship. Even though certain countries of the world have already reached some degree of population stability – e.g., Ireland, Hungary, France, Sweden, Switzerland, and Japan – industrial expansion and rapid technological change continue in these countries, in part because of the demands made by other expanding nations. The existing expansionist phase of technological civilization cannot, however, be expected to continue indefinitely. The ecological limitations on growth in a limited space with

limited resources lead to predictions of an inevitable end to this expansion, even if mankind fails to voluntarily limit its own growth.

Sustainability should be the cornerstone of the development of the tourism industry since the natural environment constitutes most of its primary resource base. Moreover, with growing anxiety over environmental deterioration on the part of tourists and residents, firms and governments are under increasing pressure not only to endorse sustainability principles but also to encourage positive action to bring it about (Sinclair and Stabler, 1998).

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 expanse 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 percent of the land has been taken up by forests, tea and cinchona and the remaining 42 percent 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.

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## **CHAPTER VIII**

### **Summary, Conclusions and Recommendations**

- **Short Summary**
- **Conclusions**
- **Recommendations**

## CHAPTER VIII

### Summary, Conclusions and Recommendations

#### 8.1 Short Summary

Historically Darjeeling was part of the kingdom of Sikkim. In 1835 the king of Sikkim through a Deed of Grant gave a portion of the Darjeeling hills to the British for establishing a sanatorium. In 1839, Darjeeling got its first Superintendent, Dr. Campbell. The Darjeeling Municipality was established in 1850. Darjeeling was declared a Non-Regulation District till March 1937. After the independence of India in 1947, Darjeeling became a part of the state of West Bengal. A separate district of Darjeeling was established consisting of the hilly towns of Darjeeling, Kurseong, Kalimpong and some parts of the Terai region. The district was placed thereafter in the Presidency Division. The district is at present under the Jalpaiguri Division. The Gorkha-dominated hill areas of the whole Darjeeling district are under the jurisdiction of the Darjeeling Gorkha Autonomous Hill Council since its formation in 1988.

Populations have a birth rate, that is, the number of young produced per unit of population per unit of time, a death rate, that is, the number of deaths per unit of time and a growth rate. The major agent of population growth is births, and the major agent of population loss is deaths. When births exceed deaths, a population increases; and when deaths exceed additions to a population, it decreases. When births equal deaths in a given population, its size remains the same, and it is said to have zero population growth. The rate of population growth is the rate of natural increase combined with the effects of migration. Generally speaking, however, these migration effects on population growth rates are far smaller than the effects of changes in fertility and mortality.

The Darjeeling district offers the most remarkable example of growth of population stemming mainly from immigration from outside. The period of Dr. Arthur D. Campbell's Superintendent ship from 1839 saw the growth of settlements and of population in the district. The increase of population was greatest in Kalimpong, where the wasteland was rapidly brought under cultivation by new

settlers, chiefly, from Nepal. Already during, 1901–11 the population showed a decline in the rate of increase and shrinkage of the volume of immigration. Migration, density of population and patterns of distribution of settlements are important considerations for development. The growth of population is quite high in Darjeeling region and the population became double in between 1931 to 1971 and this rapid growth is partly due to migration from other areas.

During 1901-11 there was a decline in the rate of growth of population. The Bengal Census of 1872 returned the population of the district at 94712 persons (males, 53057; females, 41655) thus classified: - Hindus, 69831; Mohammedans 6248; Buddhists, 1368; Christians, 556; others, 16709. In 1901 the population was 249232 showing an increase of 12 percent, compared with an increase of 43 percent in the previous decade. In 1901 it was found that 61 percent of the population was of Nepalese origin; 27 percent were tribes and scheduled castes; while the Bhutias formed a bare 3 percent and the Tibetans 1 percent of the population. If we take 1911 as the base, the rates of growth of population in Kalimpong and Kurseong towns are higher than that of Darjeeling town. Further, in the post independence period the rate of growth of urban population is lower than the rate of growth of rural population. The (crude) index of growth of urban population in 1961 is 127 and in 1971 it is 133.

Darjeeling and Kurseong towns historically developed as the centres for tea plantation. Kalimpong town was a traditional centre of Indo-Tibetan trade. The population of the urban area of Darjeeling district was subject to considerable seasonal variation. The most favourite summer resort of Eastern India, Darjeeling received large number of visitors in the towns of Darjeeling, Kurseong and Kalimpong.

Development is related in various ways to population change. The early settlers of Darjeeling were mostly agriculturists. Soon, the British established experimental tea plantations; these eventually gave rise to a successful commercial tea industry around 1856. Tea estates developed all around Darjeeling in the second half of the 19th century. During this time immigrants flooded in to work in construction sites, tea gardens, and other agriculture related projects. Although in terms of total trade value, tea ranks much below coffee. Economically tea is an extremely valuable

source of foreign exchange, including the hard currencies, for a number of developing countries, particularly Ceylon and India. It is the second leading item of India's export trade and the tea industry provides employment for about a million workers, besides being the mainstay of the plywood industry.

In 1841, Dr. A. Campbell, the first Superintendent of Darjeeling, brought Chinese tea seeds from Kumaon and planted them in his garden in Darjeeling town. By the end of 1856, tea had been planted in many areas in and around Darjeeling. By 1874, there were 113 tea gardens in Darjeeling district only. Tea cultivation is the great industrial feature of Darjeeling district – conducted almost entirely by means of English capital and under European supervision. The first Indian owned tea established in 1876. India Tea Association formed in 1881. The tea industry was almost confined to the hills of Darjeeling and the sub-mountain tract of the Dwars (or Dooars) in Jalpaiguri. In 1897 there was 186 gardens, with 55822 acres under tea, employing 32897 persons permanently and 14108 persons temporarily and producing nearly 12 million lb. Plantations Labour Act passed in 1951. Tea Act introduced in 1952. The Tea Board of India was setup for the promotion of tea drinking within the country and abroad in 1953.

Tea industry is not only the mainstay of the hill people of Darjeeling but also the backbone of the hill economy. A good number of the tea estates are situated in the two subdivisions, i.e., Darjeeling and Kurseong. By 1905, the tea industry became the staple industry of Darjeeling and about one-third of the entire population depended on the tea estates. The tea industry has been of considerable importance in the national economy of India. India remains the world's largest producer, consumer and exporter of tea.

The tea plantation workers are mainly the immigrants or the descendents of migrants from various parts of the country and even from the neighbouring countries. The tea garden workers in Assam and Dooars are mainly the tribals from Bihar, Orissa and Madhya Pradesh while the entire work force of Darjeeling hills are exclusively of Nepalese origin (Sharma, 1999).

The tea industry influences growth of many industries. The plywood industry owes its origin to the development of the tea industry. Most of the fertilizers used in

tea industry are of Indian manufacture. The tea industry has provided a stimulus to the development of means of communications and transportation and forestry. Most of the roads in the areas producing tea have been constructed by the tea gardens. It may also be noted that the Darjeeling Himalayan Railway service between Siliguri and Darjeeling connecting the plains and the hills were originally started for sending essential supplies like coal, fertilizer, machinery, building materials from Calcutta to Darjeeling via Siliguri and for sending regular supply of tea from the Darjeeling gardens to the Calcutta market.

Apart from promoting balanced regional development, the tea industry also helps in maintaining an ecological balance. A small number of industries in fact provide a better example of sound environmental management than tea. Tea gardens do not pollute air or water. Historically, Darjeeling did not develop without tea industry. The tea industry is passing through great difficulty. The number one problem of the industry is that the consumption of tea is not increasing as fast as the production. As a result, price of tea is declining and so the profitability.

Entry for foreign tourists into the Darjeeling hill areas was closed following the Indo-China war in 1962. Consequently, infrastructure development suffered. This restriction was lifted in 1985 and the number of tourists, particularly the foreign tourists visiting Darjeeling increased markedly. Tourism can be the largest source of income for developing nations. Tourism is an important economic activity in this mountain area generating incomes and employment for the local population. From 1980 to 1987 the number of tourists visiting India increased from 800,000 to 1.1 million. Tourism is widely recognized as the world's largest industry.

In the Kalimpong subdivision land was withheld from development under tea, Government's policy being to reserve that area for forest and ordinary cultivation. Cinchona cultivation was introduced by the government in 1862. At Mongpu the Government Cinchona Plantation is situated. Nowhere in the administrative reports of Darjeeling district Gazetteers or travellers' reports, any mention of the migration pattern of the Nepalese in cinchona plantations of Darjeeling hills, is mentioned. The cinchona Plantation workers had peasant background of Nepal and Sikkim. Rest of the working population was enticed from the local people. The migration into the

Cinchona plantation was family based and thus their socio-economic life was shaped and moulded by the plantation system. The total population of the workers is 6354. Among the plantation workers, there are 586 (47.6 percent) males, 284 females (23.1 percent) and 302 (24.5 percent) child workers. Any emphasis on the tea industry as the most potent factor for growth of population in the district should not minimize the role-played by general agriculture. All the Nepalese immigrants could not obviously be absorbed in the tea plantations because, while the immigration of these people continued, the tea plantation area could not be extended indefinitely due to various ecological and other constraints. Those who could not be absorbed in the tea plantations embraced agriculture by and large, though many among them were engaged in the trans-Himalayan trade between Tibet and the East India Company.

The phenomenal growth of the population since 1872 is due to two main causes, the development of the tea industry and the influx of settlers to exploit the wastelands of the district. The larger part of this population was composed of incoming agriculturists. Considering growth rate rank (1981-91) of the districts of West Bengal, out of 17 Darjeeling district stands in 2<sup>nd</sup> rank. There has been marked acceleration in urbanization process in the district of Darjeeling. The percentage of agricultural area to total geographical area has increased in Darjeeling district considerably. In Darjeeling district 41.75 percent of the geographical area is under forest. Prior to independence, more than 63 percent of the total areas of Darjeeling district were covered with dense forest. The number of married males is more than that of married females in Darjeeling district. Migration is although as old as human history, the massive population movements of the modern times have wider social, economic, political, demographic and ecological implications. The importance of migration in the region has been overwhelming.

The Darjeeling Himalayan Railway opened in 1881, facilitating rapid communication between the town and the plains below. The purpose of the Darjeeling Himalayan Railway was to reduce the haulage rates of essential commodities (such as rice) to Darjeeling and to improve the economic viability of local industries such as tea production. Earlier, the DHR had put Darjeeling on the world tea map. It was practically aimed at carrying the tea to the plains. The road system of the district as well as the Darjeeling Himalayan Railway system facilitated trade.

From 1861 onwards Darjeeling as a commercial centre attracted attention of mercantile community. With the improvement of communications, great quantities of tea would be exported to Sikkim and Tibet replacing brick tea imported from Lhasa and China. The imports increased greatly during 1860-63. The Imperial Bank opened its Darjeeling branch in September 1922. It also provided funds for tea gardens in the district. A branch of Lloyds Bank was opened in 1935, which also provided funds for tea gardens and general banking facilities. The growth of population also facilitated trade.

Work involves not only actual work but also effective supervision and direction of work. The proportion of population engaged in agricultural sector declines in the long run. The share of the agricultural sector in total product (national income) declines with economic development. The decomposition of the working force over decades may point out the relative shift in the structure of the work force associated with country's economic development. Initially at a static level of the economy, primary sector is most important as compared to secondary and tertiary sector. At a matured stage of economic development the tertiary sector becomes most important engaging the largest working population of the country. The participation rate in the tertiary sector in Darjeeling is much higher than the secondary sector. Though the primary sector in Darjeeling is now the largest sector, the tertiary sector is also growing rapidly and it can be predicted that in the year 2036 the tertiary sector would rise above the primary sector. And that implies a definite shift will be there in occupational structure from primary sector to tertiary sector.

In the town of Darjeeling there were three medical institutions – the Eden Sanatorium for Europeans, the Lowis Jubilee Sanatorium for natives and the Victoria Memorial Dispensary for natives and Europeans. In the interior of the hill region there were charitable dispensaries at Kurseong, Kalimpong, Pankhabari and at Pedong. There was also a small independent medical mission at Sukhia Pokhri close to the Nepalese border. The medical facilities available in three hill subdivisions of Darjeeling district are gradually increasing after the independence. Darjeeling records the highest number of hospitals-beds per unit of population compared to any other district in the State. The male life expectancy rate in Darjeeling in 2001 was 67 and

the female life expectancy rate in this district in 2001 was 71. In the year 1974 the infant mortality rate per thousand live births was 44.6. In the year 1981 the deprivation index of infant survival for the district of Darjeeling was 0.310 and in the year 1991 the deprivation index of infant survival for the district of Darjeeling was 0.760. The male infant mortality rate in 2001 was 39 and the female infant mortality rate in 2001 was 43. The human development index rank of this district was 4. Again the gender development index of the district of Darjeeling was 0.60 and the gender development index rank was 2.

When man caused damage to the basic natural resources necessary for survival, i.e., water, soil, forests, the atmosphere, etc, then it is called Environmental Degradation. Economic activity affects the environment in diverse ways. Steep gradients of the hill slope create ideal conditions for soil wash and rapid depletion of land resources. The immediate effect of pervasive poverty is the depletion of forest and forest resources. Survival needs of the impoverished rural communities often lead to human entry into forests, and illegal felling and timber-smuggling, resulting in rapid decline of forest cover which aggravates soil erosion and other environmental problems. The woodcutter on the hill hardly realizes the effect of felling trees and laying bare the hill slopes. The network mechanism of road system, construction of lodges, cottages etc. has eroded many forest areas in Himalayas which result floods and droughts, flash floods, landslides, failure of hill slopes, climatic changes, soil erosion and sedimentation of lakes. Tourism, especially mass tourism results in adverse impacts, leading to environmental stress. Tourism activities also result in soil erosion, change in plant cover and species diversity. The rapid increase in tourist population has also resulted in the creation of high-density urban areas lacking in aesthetic value. The rapid increase in urban and tourist population and the associated building activities results in landslides nearly every year.

## **8.2 Conclusions**

The consequences of population growth on economic development have attracted the attention of economists ever since *Adam Smith* wrote his *Wealth of Nations*. Economic and demographic development can be said, go hand in hand. Population growth affects economic development in two ways, firstly, by promoting

economic development and secondly, by retarding economic development. Migration of people from one area to another could be important instrument for achieving economic development. Population growth is basically influenced by three sets of factors: (a) the economic rationality of having large or small families, (b) the socio-cultural context influencing preferences for large or small families, and (c) health care systems and nutritional status, which determine human ability to control or cope with biological processes. Long-term trends in population reflect changes in all three sets of factors. The different paces at which these factors change have led to long periods of high population growth or low population growth.

Birth rate and death rate are the decisive factors that influence the size and shape of the population and therefore their importance in population studies is crucial. In addition to these, factors like marriage rate, belief regarding social status and marriage, age of marriage, orthodox customs related to marriage, early marriage and its effects on the health of the mother and the child, child infanticide rate, maternal death, still birth, resistance power, level of medical services, availability of nutritious food, purchasing power of the people, etc. also affect the birth and death rate.

Economics and demography are mutually related to each other. Demography studies regional distribution of the population. The regional distribution of population deeply affects the economic activities and economic factors of the society. In the same way, economics also helps to provide useful information to demography.

The word migration denotes movement of population with the change of residence. Migration is an outcome of economic and political change. Economic growth creates disparities in wealth among countries and among areas within countries. The importance of migration for developing countries cannot be overestimated. Migration is a major factor in economic development and manpower planning. A town will have net immigration of population from other areas during a particular period if its natural rate of population growth (birth rate-death rate) over the same period is less than the census growth rate. In some districts like Jalpaiguri, Darjeeling and Dinajpur, there were wastelands available for cultivation. There was a 'constant' influx of labourers from Nepal for employment in the tea gardens of Darjeeling. Migration from Nepal to take up land for cultivation in Kalimpong

continued in 1879-80, and in 1875-76. Demography views tourism as a form of temporary migration (Jafari, 2000). Except for tea and timber, there is practically no other major industry in the areas (Datta, 2003).

The two most significant contributors to the development of Darjeeling's economy were tourism and the tea industry. The establishment of the first tea plantations on a commercial basis in 1856 at Aloorbari and at Lebong created a great demand for plantation labour in the district. From around this time, immigration of plantation labour caused by the opening of tea gardens has been a major factor in the population increase of the district. The tea industry is extremely labour intensive industry. More than a million workers in India are directly employed in the tea plantations and manufacturing industries at the present time. In addition, a large number of people find employment in a range of supplementary industries associated with tea plantations – for example, among others, ply-wood, tea chests, aluminium foil, metal fittings, fertilizers, insecticides, transport, warehousing and business and trade related with the industry. The workers in the tea plantations of Darjeeling district were predominantly Nepalese who came as indentured labour. In 1892 a Tea District Labour Association was formed to undertake recruiting. From 1947 there has been a steady decline in the labour force in tea plantations all over India.

Throughout the world tourism has emerged as a major sociological and economical factor. The turnover figures are indeed tremendous. It will not be an exaggeration to say that tourism has now become the largest industry in the world. Tourism is not only an economic activity of importance to national development, but also an important medium of cultural exchanges among nations of the world.

Rapid population growth is a major cause of environmental degradation and rapid use of resources leads to increased pressure on the use of country's resources with the result that there is air and water pollution, loss of biodiversity and soil degradation. Rapid population growth depletes resources and threatens sustainable development. Thus rapid population growth and environmental degradation go hand in hand.

The environmental problems of a country depend on its stage of development, economic structure, production techniques in use and its environmental policies. Urbanisation, which is the concomitant result of economic development and industrial growth, has led to atmospheric pollution. Increasing vehicular traffic is the most important source of air pollution. Agricultural and industrial development along with urbanization and spread of infrastructure combined with population growth has led to environmental degradation. Environmental degradation 'harms human health, reduces economic productivity and leads to the loss of amenities.'

Deforestation also causes environmental problems. Deforestation leads to felling of trees and of natural plant growth for setting up industries, and building towns, roads, highways, and dams, etc. this destroys flora and fauna. It leads to localized flooding in hilly and adjoining areas. There is loss of human and animal life. The green landscape changes into factories, residential and commercial buildings. They produce more heat, noise and pollution, which bring environmental degradation and ultimately, result in death of humans and cause of birth defects and genetic mutations.

Another environmental problem is of soil degradation, which is caused by water and wind. Soil erosion in hilly areas is caused by rain and rivers, thereby leading to landslides and floods. Deforestation, overgrazing and step farming in hilly areas further cause soil erosion. All types of soil degradation reduce soil fertility.

Every country is endowed with unique phytogeographical and agro-ecological diversity comprising of a wide variety of agro climate zones and plenty of plant and animal species. The biodiversity is found in forests, grasslands, mountains, wetlands, deserts and marine ecosystems. Economic growth leading to expansion of agriculture, reckless exploitation of forest and mineral wealth and development of projects in biodiversity areas has led to the destruction of habitats. Consequently, there has been extinction of plant, animal and microbiological species and loss of genetic resources.

Rapid population growth leads to environmental damage. Scarcity of land use to rapidly increasing population pushes large number of people to ecologically sensitive areas such as hillsides and tropical forests. It leads to overgrazing and cutting of forests for cultivation leading to severe environmental damage. Moreover,

the pressure of rapid growth of population forces people to obtain more food for themselves and their livestock. As a result, they over-cultivate the semi-arid areas. This leads to desertification over the long run when land stops yielding anything. Besides, rapid population growth leads to the migration of large number to urban areas with industrialization. This results in severe air, water and noise pollution in cities and towns.

Increased tourism in the Himalayan Mountains has led to rapid road construction to the villages closest to the major attraction sites. The road construction activities are not only boon to the hill people but they disturb the hill ecology and environments unless precautions are taken to ensure that these facilities are created without damage to hillsides, slopes, forests fields, grasslands and human settlement. Unplanned and unscientific construction of roads leads to destruction of local fauna and flora and damage to soil and water regimes.

### **8.3 Recommendations**

We may make the following recommendations for the betterment of the present as well as the future generations of the hill economy of Darjeeling.

Firstly, sustainable development should be the most important endeavor for the policy-making agencies. The goal of sustainable development stands for a concept that reconciles the improvement of man's economic and social living conditions with long-term security of the natural basis of life. Stabilizing population is an essential requirement for promoting sustainable development with more equitable distribution and poverty alleviation. The rising population has serious implications on food and water security, health care, rural and urban services and sustainability of ecosystem.

Sustainable development means that development should keep going. It emphasizes the creation of sustainable improvements in the quality of life of all people through increases in real income per capita, improvements in education, health and general quality of life and improvements in quality of natural environmental resources. Thus sustainable development is closely linked to economic development. It is a situation in which economic development does not decrease over time. Sustainable development is development that is everlasting and contributes to the

quality of life through improvements in natural environments. Natural environments, in turn, supply utility to individuals, inputs to the economic process and services that support life.

Accordingly sustainable development has many objectives. Besides increasing economic growth and meeting basic needs, the aim of lifting living standards includes a number of more specific goals such as 'bettering people's health and education opportunities, giving everyone the chance to participate in public life, helping to ensure a clean environment, promoting intergenerational equity.' Thus meeting the needs of the people in the present generation is essential in order to sustain the needs of future generations.

The damaging effects of economic development on environmental degradation can be reduced by judicious choice of economic and environmental policies and environmental investments. Choice between policies and investments should aim at harmonizing economic development with sustainable development.

Public awareness and participation are highly effective to improve environmental conditions. Conducting of formal and informal education programmes relating to environment management and environmental awareness programmes can go a long way in controlling environmental degradation and keeping the environment clean. Public participation can also render costless and useful assistance in afforestation, conservation of wildlife, management of parks, and improvements of sanitation and drainage systems. Use of indigenous institutions and local voluntary organization can render much help in educating the masses about the harmful effects of environmental degradation and the benefits of keeping the environment clean.

There are many international conventions and agreements on environmental protection and conservation, which every country is expected to follow. They include the Montreal Protocol regarding the phasing out of ozone-depleting chemicals. The Basel Convention which relates to the control of the transboundary movement and disposal of hazardous wastes among others, there is the Rio Declaration on Environment and Development and the Agendas 21 which is the operational programme for sustainable development. Then, there are the GATT clauses on Environment. Not all countries are signatories to the various agreements and

conventions. There is threat of trade sanctions against countries that do not honour agreements relating to biodiversity protection or greenhouse gas emissions but many countries do not adhere to them.

To conclude, sustainable development aims at accelerating economic development in order to conserve and enhance the stock of environmental, human and physical capital without making future generations worse off.

Secondly, roads and buildings should be made following the proper legal outline because this three hill subdivisions are situated in a highly earthquake prone area. Landslips cannot entirely be prevented but they can be checked by proper protective measures. Turfing and afforestation of bare slopes, well-directed and efficient drainage, reduction of the steepness of hill slopes by terracing, outward protection of the soil-cap by means of revetments and buttresses, protection of the harder rock outcrops, systematic quarrying in hillsides and control of the erosive action of streams and waterfalls are some of the measures, which give useful protection.

Thirdly, eco-tourism may be an option for the hill economy of Darjeeling. *The International Eco-tourism Society* defines eco-tourism as 'responsible travel to natural areas that conserves the environment and improves the well being of the local people'. A responsible tourism should leave nothing but the footprints. It would be organized in such a way that the adverse impact on the nature is minimized and welfare of the local people, improved. The main idea is to achieve a *growth with resource enhancement of environment and nature* (GREEN).

Varying interpretations and definitions of eco-tourism currently exist. The eco-tourism umbrella seems to shelter all kinds of outdoor travel-related products--from beach hotels that happen to be near a rain forest to a national park visit, guided bird watching, or scientist-led Antarctic cruising. It also encompasses adventure expeditions, such as trekking and river rafting, as well as less rigorous trips to culturally exotic or archaeologically important locations.

The general concept of eco-tourism arose when conservationists realized the potential benefits in combining people's interest in nature with their concern for the

environment. Eco-tourism should be consistent with its environment and arise naturally from activities those are natural to the area. The local communities have to impose regulations that limit tourism within the carrying capacity of the area. Tourism should be managed in such a way as to minimize its adverse impact.

Eco-tourism is decentralized in nature and seeks to integrate rural development. Eco-tourism should ideally generate revenue for conservation of natural and cultural wealth and afford cultural exchange among rural and urban population. But its most avowed objective would be to attain a balance between nature and human beings.

The civil society organizations in Darjeeling have been performing active role in the field of education, health, environment and other socio-economic problems confronting the local communities. However, no concerted efforts have been taken so far either by the government or non-government agencies in the field of eco-tourism. A strong cultural connection with the nature and natural resources has to be developed.

In essence, preservation for tomorrow drives most of the discussion about a kinder and gentler tourism. For the future, balances need to be struck between our interest in visiting a place, the carrying capacity of the destination, and the well being of all that live there.

## *Appendix – I*

### **Deed of Darjeeling Grant**

**01.02.1835**

*Translation of the Deed of Grant making over Darjeeling to the East India Company dated 29<sup>th</sup> Maugh, Sambat 1891, 1<sup>st</sup> February 1835.*

The Governor-General having expressed his desire for the possession of the hill of Darjeeling on account its cool climate, for the purpose of enabling the servants of his Government, suffering from sickness, to avail themselves of its advantages, I, the Sikkumputtee Rajah, out of friendship for the said Governor-General hereby present Darjeeling to the East India Company, that is, all the land South of the Great Runjeet river, east of the Balasur, Kahail and Little Runjeet rivers and west of the Rungno and Mahanuddi rivers.

Seal of the Rajah prefixed to the document.

Sd/- A. Campbell,  
Superintendent of Darjeeling and  
in charge of political relations  
with Sikkim.

Source: Moktan R. (compiled, edited & published): Sikkim: Darjeeling, Compendium of Documents, Gopal Press, Varanasi, India, 2004

## *Appendix – II*

### **Revenue Earned through Customs and Central Excise Duties on Tea (in lakhs of Rupees)**

<b>Year</b>	<b>Export Duty</b>	<b>Central Excise Duty</b>
1949-50	1099	257
1950-51	1120	336
1951-52	1021	436
1952-53	1062	346
1953-54	1162	209
1954-55	1974	319
1955-56	1783	317
1956-57	2047	319
1957-58	1700	440
1958-59	1800	440

Source: Tea Statistics, 1956, Tea Board, India

### *Appendix – III*

#### **Human Development Index, Gender Development Index and corresponding ranking of districts in West Bengal**

<b>Districts</b>	<b>HDI 2001</b>	<b>HDI 2004</b>	<b>HDI (2004) rank</b>	<b>GDI Index</b>	<b>Rank of GDI</b>
Darjeeling	0.56	0.65	4	0.6	2
Jalpaiguri	0.41	0.53	10	0.492	11
Koch Behar	0.43	0.52	11	0.471	13
Dinajpur	0.38	0.51	13	0.478	12
Malda	0.29	0.44	17	0.416	17
Murshidabad	0.32	0.46	15	0.423	16
Birbhum	0.36	0.47	14	0.435	14
Bardhaman	0.55	0.64	5	0.56	7
Nadia	0.47	0.57	9	0.506	9
North 24 Parganas	0.61	0.66	3	0.564	6
Hughli	0.58	0.63	6	0.581	3
Bankura	0.46	0.52	11	0.494	10
Puruliya	0.31	0.45	16	0.424	15
Medinipur	0.55	0.62	7	0.578	4
Haora	0.65	0.68	2	0.57	5
Kolkata	0.51	0.78	1	0.642	1
South 24 parganas		0.6	8	0.521	8
West Bengal		0.57		0.55	

Source: West Bengal Human Development Report, 2004

## *Appendix – IV*

### **Distance between Monthly Per Capita Income and State Specific Poverty Line**

Sl. No.	District	Estimated MPCII (in Rs.) 1999-2000	Distance (in Rupees)	Distance in percentage	Rank
1.	Burdwan	294.58	-82.12	-27.88	3
2.	Birbhum	237.75	-138.95	-58.44	7
3.	Bankura	266.50	-110.20	-41.35	4
4.	Midnapore	254.92	-121.78	-47.77	6
5.	Howrah	264.08	-112.62	-42.65	5
6.	Hooghly	362.34	-14.36	-3.96	2
7.	24 Parganas (N)	219.41	-157.29	-71.68	11
8.	24 Parganas (S)	194.42	-182.28	-93.75	16
9.	Calcutta	424.26	+47.56	+11.21	1
10.	Nadia	220.08	-156.62	-71.16	9
11.	Murshidabad	217.19	-159.61	-73.48	12
12.	Uttar Dinajpur	172.71	-203.99	-118.11	18
13.	Dakshin Dinajpur	209.85	-166.85	-79.51	14
14.	Malda	193.01	-183.69	-95.17	17
15.	Jalpaiguri	226.17	-150.53	-66.60	8
16.	Darjeeling	220.02	-156.68	-71.21	10
17.	Coochbehar	216.05	-160.65	-74.35	13
18.	Purulia	201.60	-175.10	-86.85	15

Note: State Specific Poverty Line (percapita per month) is calculated to be Rs. 376.70.

Source: Website: [wbprd.gov.in](http://wbprd.gov.in)

## Appendix – V

### Abstracts from Census 1971, Darjeeling

Population	Darjeeling		
	Total	Persons	781777
	Males	415442	
	Females	366335	
Rural	Persons	601565	
	Males	314934	
	Females	286631	
Urban	Persons	180212	
	Males	100508	
	Females	79704	
Decennial Population Growth Rate 1961-71	Total	+25.16%	
	Rural	+25.33%	
	Urban	+24.60%	
Area in Sq. Km.	Total	3075.0	
	Rural	3035.1	
	Urban	39.9	
Density of population per Sq. Kms.	Total	254	
	Rural	198	
	Urban	4517	
Sex Ratio (no. of Females Per 1000 males)	Total	882	
	Rural	910	
	Urban	793	
Literacy Rate	Total	Persons	33.07%
		Males	41.75%
		Females	23.23%
	Rural	Persons	26.01%
		Males	35.23%
		Females	15.88%

	Urban	Persons	56.64%
		Males	62.19%
		Females	49.64%
Proportion of Urban population to total Population			23.05%
Percentage of workers to total population (Main Activity only)	Total	Persons	36.13
		Males	48.93
		Females	21.61
	Rural	Persons	38.12
		Males	49.26
		Females	25.88
	Urban	Persons	29.47
		Males	47.89
		Females	6.26
Breakup of Workers:			
Percentage of Total Workers:			
(i) Cultivators Total	Persons	30.47	
	Males	29.98	
	Females	31.71	
(ii) Agricultural labourers Total	Persons	9.13	
	Males	9.08	
	Females	9.26	
(iv) Other Workers Total	Persons	60.40	
	Males	60.94	
	Females	59.03	

Source: Census 1971, Series 22, West Bengal, Part X – A & B, District Census Handbook, Darjeeling

## Appendix – VI

### Abstracts from Census 1981, Darjeeling

Population	Darjeeling		
	Total	Persons	1024269
		Males	542567
		Females	481702
	Rural	Persons	742116
		Males	388346
		Females	353770
	Urban	Persons	282153
		Males	154221
		Females	127932
Decennial Population Growth Rate	Total		31.02
	Rural		23.36
	Urban		56.57
Density of population (per Sq. Kms.)			325
Sex Ratio (no. of Females Per 1000 males)	Total		888
	Rural		911
	Urban		830
Literacy Rate	Persons	42.47	
	Males	51.89	
	Females	31.85	
Percentage of urban population to total Population			27.55
Percentage of total Population:			
(i) Main Workers	Persons	35.01	
	Males	52.34	
	Females	19.64	
(ii) Marginal workers	Persons	1.23	
	Males	0.90	
	Females	1.61	

(iii) Non Workers	Persons	63.76
	Males	50.45
	Females	78.76
Breakup of Main Workers: Percentage among Main workers		
(i) Cultivators	Persons	26.42
	Males	24.88
	Females	30.71
(ii) Agricultural labourers	Persons	8.97
	Males	9.40
	Females	7.73
(iii) Household Industry	Persons	1.32
	Males	1.45
	Females	0.96
(iv) Other Workers	Persons	63.31
	Males	64.28
	Females	60.60

Source: Ghosh, S. N.: Census of India 1981, Series 23, West Bengal, District Census Handbook, Part XIII – A, Village and Town Directory, Darjeeling District, Published by the controller, Government Printing, Calcutta, 1988

## Appendix – VII

### Abstracts from Census 1991, Darjeeling

Population	Darjeeling		
	Total	Persons	1299919
		Males	679323
		Females	620596
	Rural	Persons	903859
		Males	467324
		Females	436535
	Urban	Persons	396000
		Males	211999
		Females	184061
Decennial Population Growth Rate 81 – 91			+26.91
Density of population (per Sq. Km.)			413
Sex Ratio (no. of Females Per 1000 males)			914
Literacy Rate	Persons	57.95	
	Males	67.07	
	Females	47.84	
Percentage of urban to total Population			30.47
Percentage to total Population:			
(i) Main Workers	Persons	33.71	
	Males	46.77	
	Females	19.42	
(ii) Marginal workers	Persons	0.51	
	Males	0.36	
	Females	0.68	
(iii) Non Workers	Persons	65.78	
	Males	52.87	
	Females	79.90	
Breakup of Main Workers:			
Percentage among Main workers			

Percentage of workers to total workers in different Sectors		
(i) Cultivators	Persons	24.74
	Males	23.63
	Females	27.67
(ii) Agricultural labourers	Persons	11.82
	Males	11.51
	Females	12.62
(iii) Livestock, Forestry, Fishing, Hunting and plantation orchards and Allied activities	Persons	21.01
	Males	14.84
	Females	37.28
(iv) Mining and Quarrying	Persons	0.01
	Males	0.02
	Females	0.00
(va) Manufacturing, Processing, Servicing and repairs in Household Industry	Persons	0.62
	Males	0.65
	Females	0.55
(vb) Manufacturing, Processing, Servicing and repairs in other than Household Industry	Persons	6.59
	Males	7.45
	Females	4.30
(vi) Construction	Persons	2.40
	Males	3.02
	Females	0.76
(vii) Trade and Commerce	Persons	11.36
	Males	14.58
	Females	2.88
(viii) Transport storage and Communications	Persons	4.64
	Males	6.25
	Females	0.42
(ix) Other Services	Persons	16.81
	Males	18.05
	Females	13.52

Source: Census of India 1991, Series 26, West Bengal, District Census Handbook, Darjeeling District, Part XII – B

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