PROBLEMS AND PROSPECTS OF DEVELOPMENT OF KURSEONG TOWN

THESIS SUBMITTED TO THE UNIVERSITY OF NORTH BENGAL FOR THE DEGREE OF DOCTOR OF PHILOSOPHY (SCIENCE)

By

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To Whom It May Concern:.

I am pleased to certify that Sri Jayanta Pal prepared his Ph.D. Thesis on PROBLEMS AND PROSPECTS OF DEVELOPMENT OF KUSEONG TOWN under my guidance. It is an original work based on primary and secondary data and information collected by him from the field visiting different offices and organizations. So far my knowledge goes no one worked on this topic in the past in this University or other Universities. He is sincere and methodical in his work. The Thesis if publish will helps mainly the town planner but also urban researchers in the future.

I wish him success in his future life

1.7.2K.

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PREFACE

The process of urbanisation is gaining more and more attention of different disciplines, particularly belonging to social sciences. However 'the historians and sociologists have given much more attention to the urban effects of the Industrial Revolution than have geographers. It results... that the environment factors in this interesting development have been to a large extent ignored, or at least submerged in the discussion of the sociological conditions' (Taylor, 1968). During the World War II and immediately after that the devastation of cities in Europe and else where posed a new challenge to the students of urban problems. Along with the planners, engineers, sociologists, economists and administrators, the geographers had to take important and positive role for judging and evaluating the relation between man and environment (Sinha and Rao, 1968). Today it has been observed that in all human societies the process of urbanisation is present as a natural one. According to L.F. Thomas,'urbanisation has become so powerful an influence in human life that the very term'which we use to express larger social loyalties is citizenship' (Taylor, 1968). But, like in many other natural processes here also an unplanned urbanisation may lead to harm instead of good in human life. In such cases a city may be over flooded with population and central functions. This kind of situation is not inherent in the process of urbanisation. Different factors like geographical location, natural calamities, political reformulation, industrialisation etc. make all these differences. Thus, the general preference is for a continuous process of planning. These days it is the belief of many scholars that a good planning may lead to an urbanisation of higher speed and better health so far as humanity is concerned.

Urbanisation whether a process or a system, is basically a movement of people from lower order settlements to higher order settlements. At a given time urbanisation has been an inevitable phenomenon. Urbanisation has been, in theory at least, synonymous with advancement in technology, industrialisation and associated developments in secondary and tertiary activities

Despite a long history of urbanisation going back to nearly five millennia, India entered the 20th century with a low degree of urbanisation. Its 25.8 million urban population in 1901

made only 10.8 percent of the total population. India, like other developing countries, went through a process of rapid urbanisation during the present century. Its urban population grew to about 218 million in 1991 i.e. 25.7 percent of the country's total population.

Kurseong emerged as a settlement with the growth of Darjiling as a sanatorium for the British soldiers. Even though it was declared a municipality in 1879 and a sub-divisional headquarter in 1891, this small hill town has registered a very slow rate of growth of population since its inception. Only during 1981-91, it has a registered a growth of about 50 percent.

The study seeks to answer some basic questions as to what factors are responsible for the slow growth of population till 1981 and high growth during 1981-91? To what extent the land uses in the town are emerging in right direction? What socio-economic factors have caused the existing urban land uses? Which factors are responsible for the present problems faced by the town? What improvements are needed in planning policy for future development of Kurseong town?

The study has been designed into seven chapters. In Chapter I, the geology of the Darjiling Himalaya has been studied and an analysis of the slope of Kurseong town and its environs has been done. The climate of the town along with its flora and fauna has been discussed. Chapter II is devoted to the study of varied demographic structure of the town, i.e. population composition, density and distribution of population, growth of population, literacy and occupational structure. Population of the town has been projected up to AD 2011 by employing mathematical methods. In Chapter III, study of different land uses in the town has been done. The changes in different land uses during 1977-99 period have also been brought out in this chapter. The intensity of land uses and their changes have been studied in detail. In Chapter IV, the different socio-economic functions available on the town have been studied in detail with special emphasis on educational institution, trades and commerce, transport and living conditions of the people. Chapter V tries to deal with the different problems associated with land, people and environment. In Chapter VI, the different developmental programmes taken up in the past, at present and to be taken up in future are critically evaluated and in Chapter VII, plans and

ideas from the geographical viewpoint have been suggested for the future development of the town.

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INTRODUCTION

STUDY AREA

Kurseong town is situated at 26°53′N latitude and 88°17′E longitude in the Darjiling Himalaya. It lies at a distance of 622 km from Calcutta, 48 km from Siliguri and 29 km from Darjiling (Fig. 1). It has been suggested that 'this name is a corruption of Lepcha word *Kurson-rip*, the small white orchid, which grows plentifully around Kurseong and that it

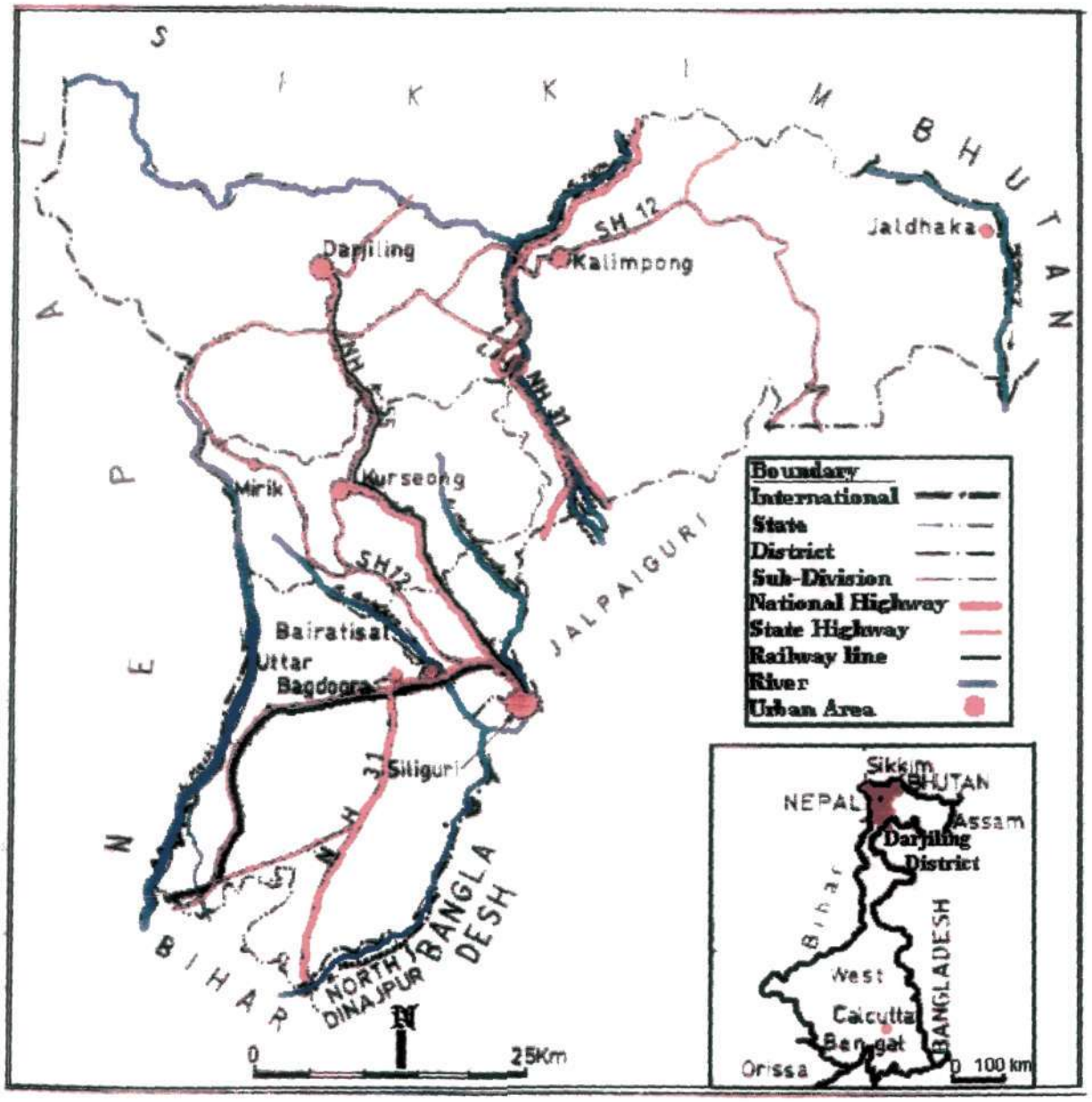

Fig.1 : Location map of Darjiling district.

means 'the place of white orchids'. Another suggestion is that it refers to a cane used to grow there in rich profusion, and which the Lepchas in their *Rong-ring*, as they term their own language, called *kur*, and that *'seong'* is a corruption of *sheang*, a stick' (O'Malley, 1907). Its altitude varies between 1,300 metres and 1,800 metres. It is situated on the Senchal-Mahaldiram range, which radiates from Ghoom Saddle in the north and descends gradually to Mahaldiram and Dow Hill in the south, and further down to the plain of Terai. Stretching

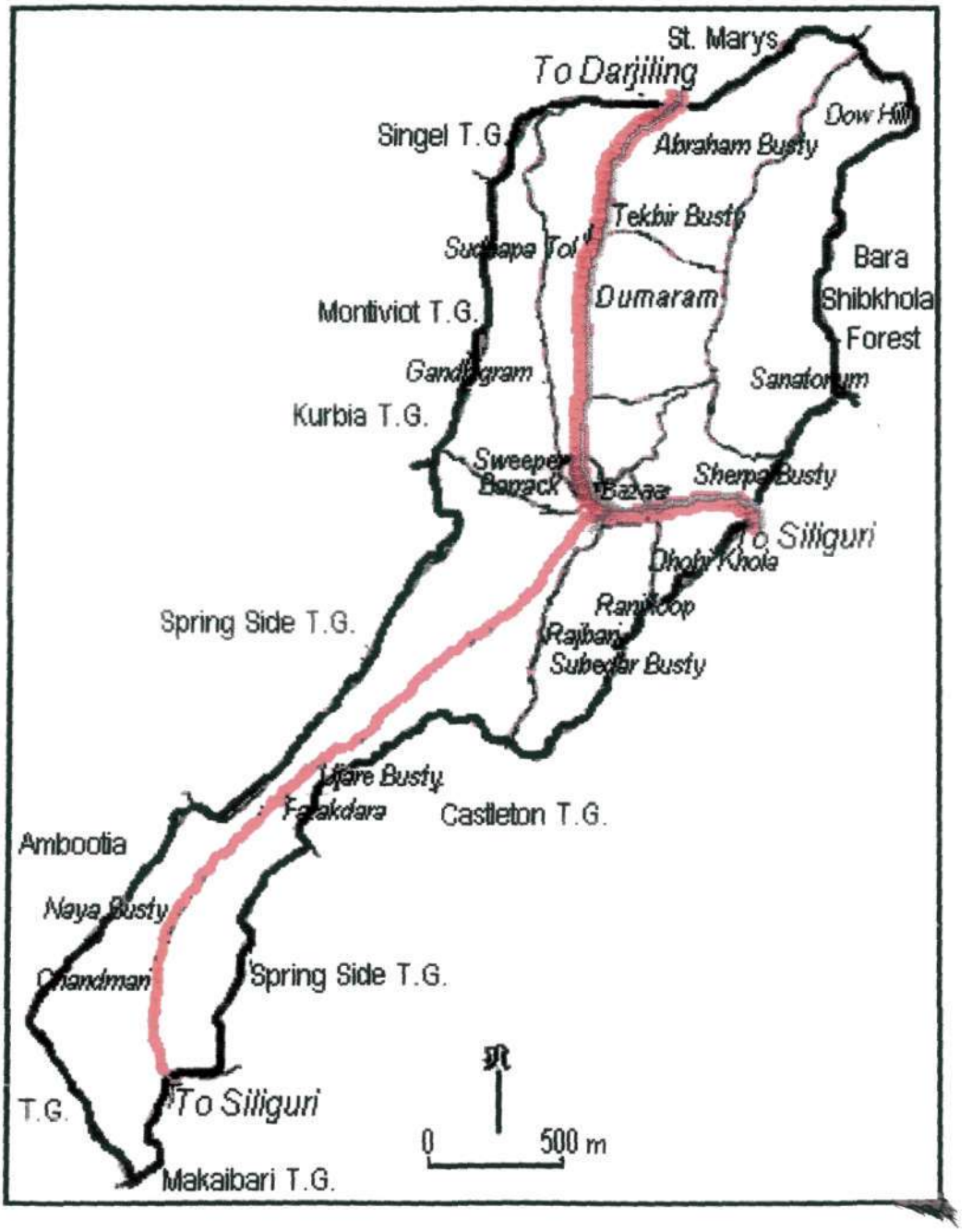

Fig. 2 : Location map of Kurseong town.

from north to south, the town has a westerly slope from the crest of Dow Hill, 1,840 metres above mean sea level (Fig. 2). Another part of the town runs southward, along the crest of a spur branching off from the main ridge near the railway station till it reaches Constantia, a hillock 3 kilometres south-west of the town centre (Pic. 1). The town is bounded by two perennial jhoras (streams): Dhobi Khola in the east and Hussain Khola in the north.

Pic. 1 : The Spur.

THE MUNICIPALITY

Kurseong was constituted as a municipality on 1st May 1879. Before 1879, it was under the supervision of the Darjiling Municipality, which was constituted in 1850, and covered an area of 357.415 sq. km. For the purpose of administration of Kurseong town with its population of 2,836 (Males – 1797, Females – 1039), a Board with six Municipal Commissioners nominated by the Government was formed to administer its affairs. Of the six members, three were Indians *viz.* Jooman Singh, Sylak Sirdar and Hajee Indad Ali. The Deputy Commissioner, Darjiling, was the *ex-officio* Chairman. The first Chairman was Mr. M.M. Walter. The Bengal Municipal Act of 1900 divided the town into six wards (Fig. 3a) and increased the number of members on the Board from six to twelve, of whom six were elected while five were nominated by the Government and the Civil Medical Officer was an

ex-officio member. In 1936, the Municipal Board was reconstituted and of the twelve Commissioners, nine were elected from the six wards, and the Government nominated three.

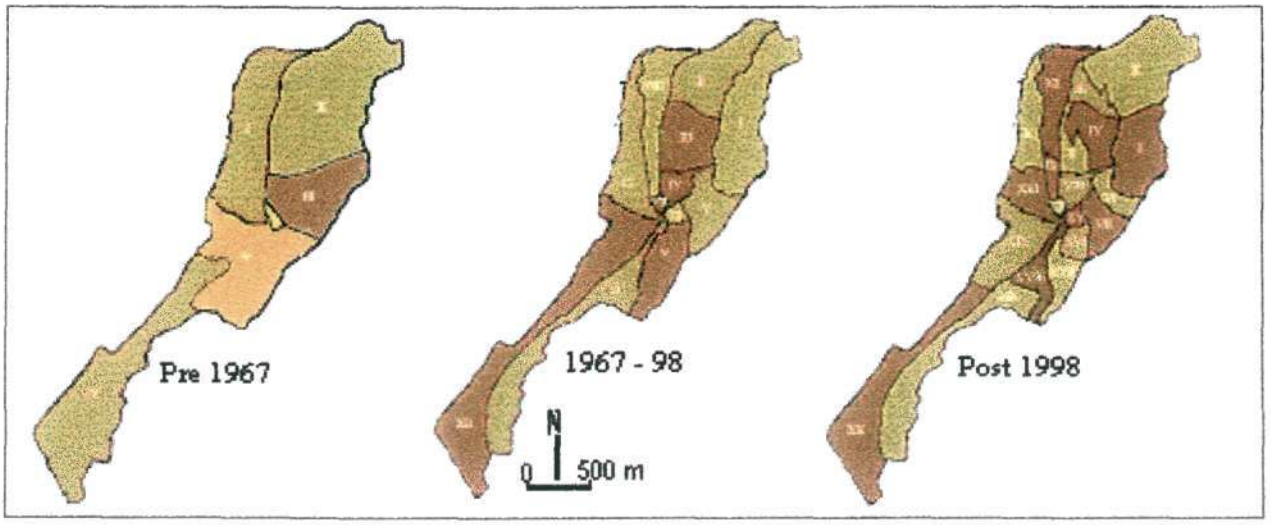

Fig. 3 : Evolution of Wards in Kurseong Municipality.

In 1967, a Government Notification did the first delimitation of ward boundaries. The town was divided into twelve wards (Fig. 3b) and the Municipal Board consisted of twelve elected Commissioners. The rapid increase in population since its inception and especially during 1981-91 led the Board to place a proposal to the Government of West Bengal for further delimitation of ward boundaries and inclusion of certain urban pockets within the Municipality for proper administration. By a Government Notification on 26th August 1998, the Municipality was divided into twenty wards (Fig. 3c) but new areas were not included.

OBJECTIVES

The objectives of this study are many folds:

(a) to evaluate the demographic structure of the town;

(b) to bring out the urban land use pattern and their changes during 1977-99;

(c) to study the growth of educational institutions and their impact on the growth of the town;

(d) to assess the various civic amenities provided by different agencies and their associated problems;

(e) to assess the environmental status of the town;

(f) to study the limitations leading to improper growth of the town;

(g) to critically analyse the different developmental programmes undertaken in the town and their implementations; and

(h) to suggest proper developmental plan for the future growth of the town.

METHODOLOGY

(a) Primary data were collected by random sampling by preparing different types of questionnaires (Appendix);

(b) Secondary data were collected from the municipality and other government and non-government agencies;

(c) Primary data were computed by taking the help of statistical methods;

(d) Maps were drawn with the help of multi-date data;

(e) Base map and land use map of 1977 of the Kurseong Municipality was used for the present land use survey; and

(f) Survey of India map and cadastral maps were consulted for mapping and analysis.

DATA COLLECTION AND COMPILATION

The data used in the present study were collected from a number of sources. These include published and unpublished records, maps, reports and tabulated data. The study is also based on intensive fieldwork, their analysis and interpretation and also the author's experience supplemented with the dialogues with various authorities and officials responsible for the town's development. For land use survey, the data on land use of 1977 of Kurseong town provided by the Siliguri Jalpaiguri Development Authority were used.

LIMITATIONS

As the study is based on both primary and secondary data, problems cropped up while analysing the said data. While analysing the census data it was found out that the population data of 1981 seemed to be showing a different trend in comparison to 1971 and 1991. As past information in some cases were not available in terms of civic amenities, it became difficult to compare the development of the different functions in the town. The owners of the private English medium schools were not forthcoming in giving the correct information about their schools. The survey of households faced problems like unwillingness on the part of the owners to divulge the correct information on migration and family incomes. Even though the town is divided into 20 wards in 1998, die to the non-availability of census data on 20 wards the study is restricted to pre-1998 divisions i.e. 12 wards.

DESIGN OF THE THESIS

The thesis has been designed in the following format:

INTRODUCTION

CHAPTER I GEOGRAPHICAL BACKGROUND OF KURSEONG TOWN

CHAPTER II POPULATION AND DEMOGRAPHIC STRUCTURE

CHAPTER III LAND USE AND THEIR DISTRIBUTION

CHAPTER IV SOCIO-ECONIMIC FUNCTIONS AND THEIR DISTRIBUTION

CHAPTER V PROBLEMS ASSOCIATED WITH LAND, PEOPLE AND ENVIRONMENT

CHAPTER VI DEVELOPMENTAL PLANS IN THE TOWN AND THEIR ANALYSIS

CHAPTER VII SUGGESTIONS AND CONCLUSION.

HISTORICAL DEVELOPMENT OF THE TOWN

Pre-Independence

The growth of Kurseong is directly related to that of the growth of Darjiling district and no study will be complete without taking the history of growth of district of Darjiling into account.

The present district of Darjiling was a part of the dominion of the Raja of Sikkim. The treaty at Titalya in 1817 between the East India Company and the Raja of Sikkim made the Company the permanent power of the tract. In February 1829, Captain Lloyd and Mr. J.W. Grant visited the Old Gorkha Station called Darjiling for six days and were immediately struck with an idea that the place was suitable for building sanatorium. At that time Darjiling and its surrounding areas were sparsely populated. After a proper survey of the area, the Company directed General Lloyd to open negotiations with the Raja of Sikkim for the cessation of Darjiling in lieu of equivalent money or land and the deed of grant was signed by the Raja on 1st February 1835.

The report by General Lloyd in 1836 decided the fate of Darjiling as the location for a sanatorium and he was appointed the Local Agent with the power to apply for land. In 1839, Dr. A.D. Campbell, IMS, was transferred from Nepal to Darjiling as Superintendent. He devoted his energy to developing the station, and within a decade, the population rose to 10,000, chiefly due to immigration from neighbouring countries -Nepal, Sikkim and Bhutan. Measures were taken to establish communication between Darjiling and the plains. Lord Napier of Magdala, then a lieutenant in the Engineers, was devoted to the construction of a road from Siliguri to Darjiling. A road, now known as the Old Military Road, measuring 64 km, was laid between 1839 and 1842, at an expenditure of Rs. 8,00,000, from Pankhabari to Darjiling via Kurseong, Dow Hill and Ghoom.

Kurseong became a halting station for military and civil personnel on their way to Darjiling. Thus with the growth of Darjiling, Kurseong also grew. By 1840, a hotel and a few Dak Bungalows had already been constructed in Kurseong. With the political consolidation of the Darjiling hill tract, the firm establishment of tea gardens, for which credit goes to Dr. Campbell, the development of other economic interests in the hill area, the inadequacy of the Old Military Road, which was impracticable for wheeled traffic, was clearly exposed. Accordingly, a plan to construct a cart road, with a width of 7.315 metres and a general

gradient of 3 in 100, was taken up in 1861. The first stretch, from Darjiling to Kurseong, was opened up for traffic in 1864 and the whole road up to Siliguri was completed in 1869 at an expenditure of Rs.55,924 per km. Tongas, bullock carts and pack ponies were the only means of travelling & carrying goods on this cart road.

The high cost of transportation by carts led Mr. Franklin Prestage, in 1878, to submit a detailed scheme to Sir Ashley Eden, the then Governor of Bengal, to start a railway line between Siliguri and Darjiling along the cart road. The Darjiling Himalayan Railway (D.H.R.) Company was formed in 1879 and Kurseong town was selected as the administrative headquarters of the Darjiling Himalayan Railway in 1879. The section between Siliguri and Kurseong was opened up for traffic on 23rd August 1880 and that up to Darjiling on 4th July 1881. This was the first mountain railway in the Indian sub-continent and was completed in less than 2 years, at a cost of about Rs.32, 311 per km.

The establishment of the tea industry in Darjiling is due to the enterprise of Dr. Campbell, Superintendent of Darjiling, who started the experimental growth of tea with the first trial in 1841. The tea industry was established as a commercial enterprise in 1856,with the opening of the Alubari Tea Garden by the Kurseong and Darjiling Tea Company and another garden on Lebong spur by the Darjiling Land Mortgage Bank. By the end of 1866, there were 39 tea gardens with 4046.8 ha under cultivation, and by 1895 the number increased to 186. The Makaibari and Singel (Pic. 2) and Ambootia tea gardens were started

Pic. 2 : The Singel Tea Garden.

near Kurseong in 1857 and 1862 respectively and in 1871 the gardens of Springfield and Castleton were laid out.

Along with the development of communication networks and the tea industry, the district also witnessed the establishment of educational and self-governing institutions by the Europeans. The first school to come up was Loreto Convent for girls in Darjiling in 1846, and the first municipality in the hills was constituted in Darjiling in 1850. The possibility of developing Kurseong as a supplementary hill station to Darjiling started attracting public attention and on 1st May 1879, the second municipality in the district was constituted in Kurseong. According to a report by the then Health Commissioner of Bengal, the total population of the Municipality at that time was 2,836 consisting of 1707 males and 1,039 females. In 1891 Kurseong was made the headquarters of a sub-division that included the Terai and a portion of hill. Simultaneously, measures were taken to provide urban facilities to this newly growing town. In 1879, Sir Ashley Eden, the then Governor of Bengal, founded the Government School for boys and girls (later Dow Hill School for Girls and Victoria School for Boys) at Constantia that was later shifted to Dow Hill in 1880. The St. Helen's School for Girls was opened in a small rented house in 1890 at Fatakdara, and was later moved to its present site in 1900. With the shifting of the Government School to Dow Hill, Constantia was made the office of the Sub-divisional Officer of Kurseong.

The most noticeable urban expansion of Kurseong was however experienced at the turn of the century, when the Kurseong Improvement Committee was set up for organised development efforts of this hill station and with the construction of the Bourdillion Road connecting the Montiviot end of the township with the Old Military Road. A Scots Mission church was built in 1904, and the Jesuits Church in 1905. A new Kutchery was built in 1904, and a hospital and dispensary, comprising a European ward was constructed at the centre of the bazaar in 1905. The West Bengal Forest School at Dow Hill, and the Goethals Memorial School, founded in the memory of Rev. Paul Count Goethals, about 3.5 km from the town were opened in 1907. The palace club was built on a piece of land known as recreation ground in 1905, providing residential and clubs facilities to visitors. Clarendon, Grand, Pelican, Plaza, Plains View, etc. were excellent hotels, and along with the twelve bungalows of the Montiviot Estate, provided accommodation to visitors.

The Kurseong waterworks began operating in 1913, and the Kurseong Sewerage System with sewerage line was laid out in 1919. Scavengers were made to remove night soil by head loads, as it was not possible to press into service trolleys and handcarts etc., by the Municipality. After the World War I, the management of Grand Hotel, Calcutta introduced a passenger automobile service between Siliguri and Darjiling. It cut short the train journey by about 3½ hours, and since then, the course of trade, its volume and passenger transportation have undergone a major change.

Along with Europeans, many Indian Rajas and Zamindars acquired substantial areas in and around Kurseong. Among them were the Maharajadhiraj of Burdwan Sir Bejay Chand Mehtap and the Raja of Kakina. The retreat of the Maharajadhiraj of Burdwan was called Rajbari. The S. B. Dey Tuberculosis Sanatorium, ancillary to the Jadavpur Tuberculosis Hospital, Calcutta, with 20 beds, was opened due to the philanthropy of Late Rai Bahadur S. B. Dey in 1936. The Kurseong Town Hospital, which was maintained by the municipality, was taken over by the Government in June 1944.

Post-Independence

The Govt. of India purchased the property owned by the Darjiling Himalayan Railway Company Ltd. on 20th October 1948. The supervision of the Hill Cart Road was brought under the control of the Public Works Department from the Railways. The premise of the Palace Club was converted into the broadcasting station of the All India Radio in 1961, and the relay centre was set up at Constantia. The Rajbari was made into the office of the West Bengal National Volunteer Force. The Kurseong Water Supply Remodelling Scheme was completed in January 1970. On 30th March 1986, a large part of the *bazaar* was destroyed in a devastating fire and there was a great loss of property. During 1986 to 1988, Kurseong, along with other parts of Darjiling, was in turmoil due to the movement for Gorkhaland – a separate state spearheaded by the Gorkha National Liberation Front (GNLF). Trade and commerce, tourism and normal life in the hill tract were paralysed. On 20th August 1988 an agreement was signed between the Government of West Bengal and the GNLF for normalcy in the Darjiling Himalayas. Elections were held for the formation of the Darjeeling Gorkha Hill Council (DGHC), an autonomous body under the Government of West

Bengal.In December 1999 the UNESCO declared the Darjiling Himalayan Railway a World Heritage Site.

CHAPTER I

GEOGRAPHICAL BACKGROUND OF KURSEONG TOWN

INTRODUCTION

The location of settlement and their internal structure are often influenced to a considerable degree by their terrain configuration. Urban development is greatly influenced by geomorphic changes. The construction of a town creates a new landscape, which includes a massive modification of the circulation of energy in the form of water and materials. The foundation of the buildings and roads, the cliff-faced slabs and elongated plains of the town have to be designed to be stable on the rocks and soils beneath them. Thus, the site of a town may be due to a combination of landscape factors (Chandler, 1976; Douglas, 1983; Legget, 1973; and Coates 1974).

Planning for geomorphic change is a major task for urban land managers (Douglas, 1983). Urban planning always involves some assessment on land capability either in terms of the terrain condition or limitations or in terms of the suitability of land for a particular use. Physiographical information contributed to the formulation of 'master development plans' in Poland by considering geological, topographical, hydrological, climatic and biological factors along with land capability map (Rozcyeka, 1964). From these basic information, a land zoning map may be prepared, indicating land suitability for such uses as low and high density housing zones, industrial, commercial, open spaces and recreational uses. In the U.S.A., guidelines for urban land use planning are provided by the soil conservation service on the basis of soil surveys. A similar approach has also been provided in the U.K. while the New South Wales Soil Conservation Service carries out surveys specifically for urban land capability evaluation as a part of a system which combines basic data on geology, landforms, drainage and climate to derive urban land capability class and sub-class (Hannam and Dicks, 1980).

1.1 GEOLOGY

The Himalayas is geographically a complicated mountain system. The complexity of structure and metamorphism that the rocks have undergone has posed challenging problems for correlation of the different rock formation on a regional scale. Geological investigations in

Darjiling and the adjoining regions began in the middle of the last century. In 1854, J. D. Hooker reported the geological findings of his extensive travels spread over the two years – 1848 and 1849. He traced the regional domal picture of the gneiss and observed the overlying sedimentary bedding. But the systematic geological examination of the Darjiling area was first done by Mallet in 1874. He classified the metamorphic rocks of Darjiling and western Duars into the Daling "series" and the Darjiling gneiss.

Since then, several officers of the Geological Survey of India as well as many scientists have recorded local observations. Among them Ray (1945) has differentiated progressive zones of metamorphism of Daling series and the Darjiling gneiss. Ghosh (1950) has carried out a detailed geological mapping of parts of the Darjiling Himalayas. M.B. Pande and S.S.Saha (1982) have also studied the Darjiling Himalayas extensively.

The generalised sequence of the various geological formations of the Darjiling Himalayas is given in the table below.

Table 1.1: Chronological orders of various geological formations.

Recent	Sub-aerial formations Alluvial deposits	Younger flood plain deposits of the rivers and nalas comprising of sand, gravel, pebble etc. and soil covering the rock.
Pleistocene	Raised terraces	Sand, clay, gravel, pebbles, boulder etc. representing older flood deposits
Pliocene to lower Pleistocene	Siwalik. Thrust (Main boundary Fault)	Micaceous sandstone with silt stones, clays, lignite, lenticals, etc.
Permian	Gondwana	Quartzitic sandstones with slaty bands, seams of graphite coal, lamprophyne sills and minor bounds of limestones.
	Thrust Daling series	Slate, chlorite-sericite, schist.
Precambrian	Darjiling gneiss	Fine grained angen and bonded gneiss of ten garnetferous mica, schist with extensive intrusions of biotite, hornblende and tourmaline granites, golden silvery mica schist's, carbonaceous mica schist, coarse-grained gneiss.

Based on Mallet (1874)

Morphology of the area is well defined. The mountain ranges rise steeply above the vast stretch of North Bengal Plains (Terai and Duars). The sub-Himalayas are made up of Siwalik deposits of the Tertiary Age. Although, from regional considerations, the Siwaliks have been reported to be missing over certain stretches of the sub-Himalayas, good exposures of the Siwalks occur in the Darjiling foothills, with a well-preserved section along the Tista River. Northwards, the coal bearing lower Gondwana formations comparable to the Damudas of Peninsular India and Daling group of rocks (pre-Cambrian) succeeds the Siwaliks. Further north, the Dalings are succeeded by Darjiling gneiss.

Darjiling gneiss occupies the higher reaches of the hills, and comprises the greater part of the district, including Kurseong town. The coarse grained gneiss is found mostly as schistose, and at places with gneiss's texture. The rock has a very coarse texture due to influx of a considerable amount of quartzo-feldspathic materials. From Darjiling to Kurseong, gneiss is continuous. The dips are uncertain and irregular, but vary from 40 degrees to 65 degrees northerly near Kurseong and southerly near Darjiling.

The gneiss is highly micaceous and is composed of colourless or grey quartz, white opaque feldspar, muscovite and biotite. It varies in texture from fine grained to moderately coarse rock, lenticular layers of different degrees of coarseness being commonly inter-bonded. It contains bands and lenses of pegmatite and apatite. These rock types are associated with sills of epidorite, which probably represent the basic sill intruded prior to the deformation. The accessory minerals present are kyanite, sillimanite and garnet. Kyanite and sillimanite are not always present though the rocks have attained the respective grades of metamorphism. The Darjiling gneiss is highly foliated and the foliation dips being generally from north to north-west and the amount of dip ranges from 30 degrees to 50 degrees.

The rocks of Daling series and Darjiling gneiss groups are thrust over the Gondwana and represent sediments, which have undergone metamorphism. Petrological studies show a gradual increase in metamorphism from the Dalings to Darjiling gneiss, the topmost member of which is the sillimanite gneiss, which is indicative of the higher grades of metamorphism over those of a lower grade. The Darjiling gneiss, due to the extensive development of the alumino-silicate minerals, suggests metamorphism of argillaceous sediments.

The geomorphic configuration of this hilly tract is the joint product of geological foundation and fluvial processes, although slope-wash, in particular mass movement and related phenomena also played a very significant role in the final shaping of the landform. The jointed structure of resistant gneissic rocks coupled with conspicuous chemical weathering (mainly hydrolysis) produces a thick mantle of soil and regolith, thereby reducing the shearing resistance of the country rocks significantly. The river valleys, mainly fed by springs, are narrow and steep. However, during flood discharge, they exhibit a tremendous power to erode as well as to transport a huge amount of debris. Such geomorphic processes have definitely played an extremely significant role in the evolution of the regional geomorphology. Thus it is

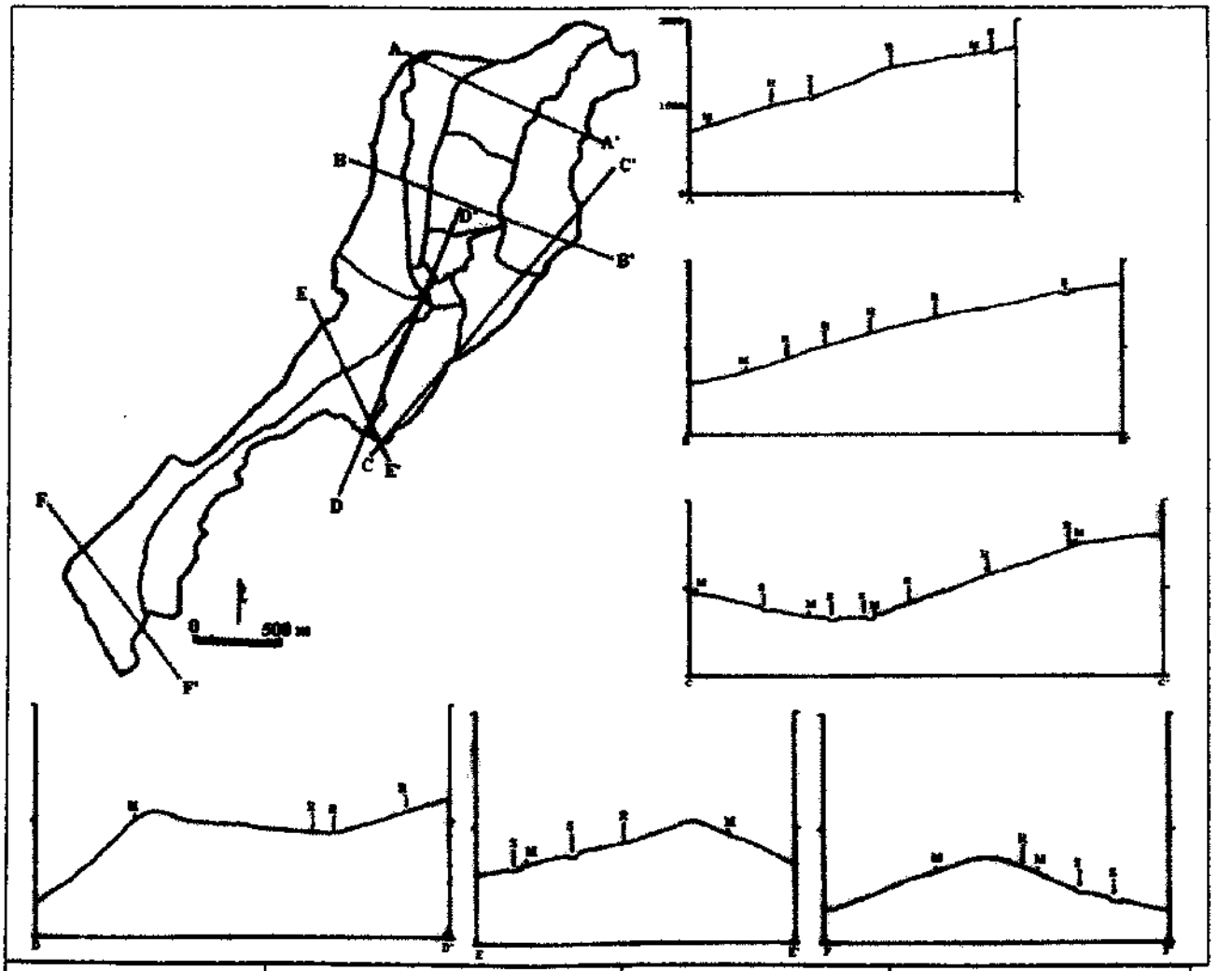

Fig. 1.1: Cross-sections showing Relief of Kurseong town.

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apparent that the complexity of geomorphic evolution of the area, presents a compound landscape in which two or more geomorphic processes have played important roles in the development of the existing topography.

1.2 RELIEF

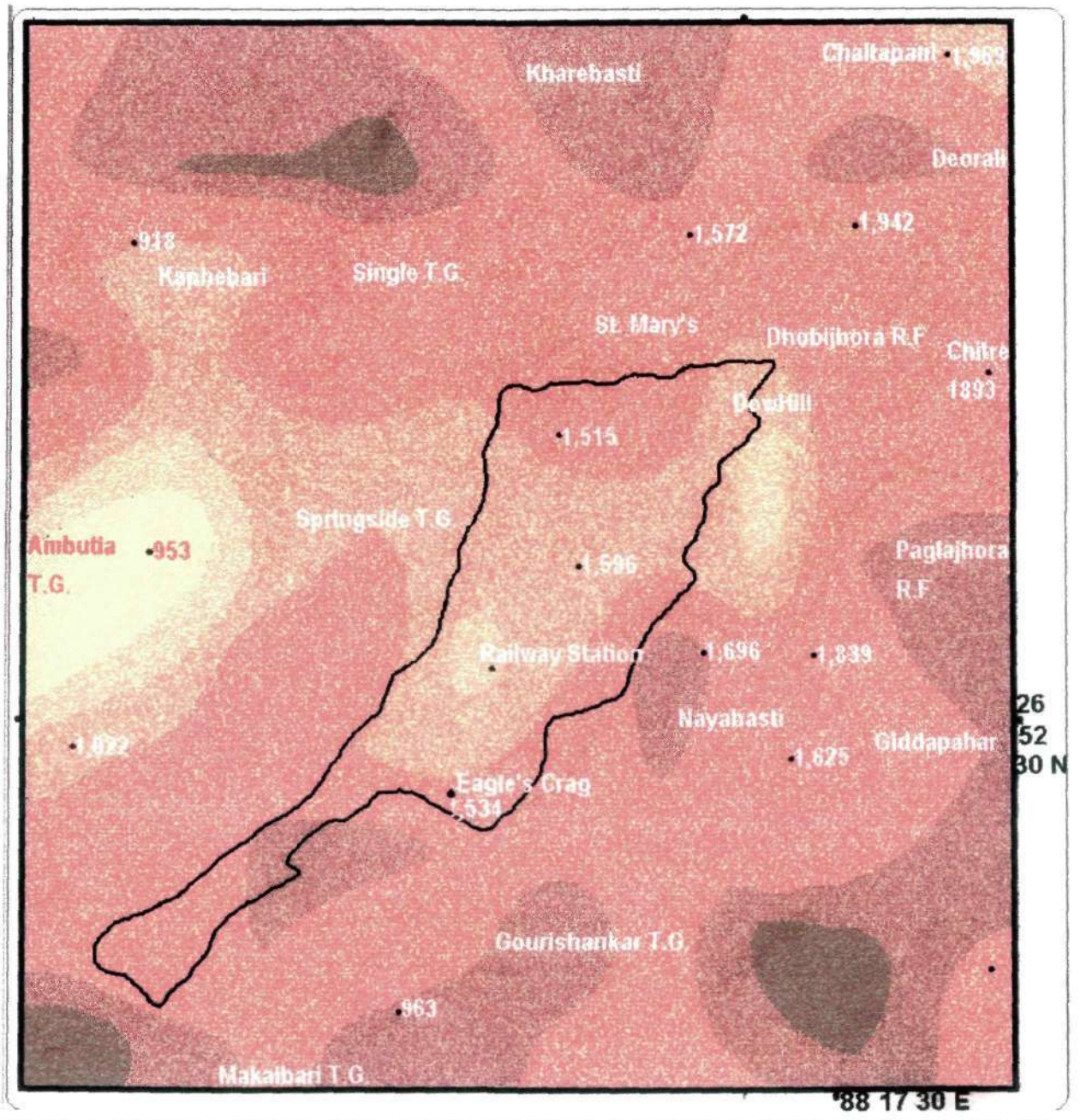
In Kurseong town, the steepness and stability of the hill slopes may be regarded as the most important geomorphic limiting factors for urban development. Nature of parent materials, legacies from the past as well as the level of human interference seem to be the important limitations. Such limitations may be overcome by using the appropriate engineering techniques. However, if the limitations are not recognised before construction commences, the new structure may later be damaged or even destroyed, with great costs to the occupants, landowners, neighbouring properties and the community at large. For proper recognition of foundation sites and soil limitations these ought to be a vital part of urban planning as a natural component of the urbanisation processes.

The cross-section along different lines on Kurseong town (Fig. 1.1) shows the degree of the slopes in different parts of the town. It reveals that some of the slopes especially along cross-sections C-C', D-D' and E-E'are not suitable for settlement and vulnerable to landslides.

1.2.1 Slope analysis

Slope may be defined simply as 'an angular inclination between different elevation'. The slope gradient defines the stage of development of a landscape (Stralher, 1956). A number of schemes of slope analysis on the basis of contours found in topographical map have been evolved by a number of prominent geomorphologists. The average slope of the study area has been evaluated by Wenthworth's method (1950).

On the basis of Wenthworth's method, a slope map of Kurseong town and its environs has been prepared (Fig. 1.2). This shows that the entire area can be broadly divided into 4 broad zones. The highest average slope (39°30′) has been identified in the extreme southwestern part of the town, while the lowest average slope (4°20′) has been found west of the town. However for a better understanding of the geographical distribution of the major slope zones, the following classes are put forward.



Less than 5°	5° to 10°	10° to 15°	15° to 20°
20° to 25°	25° to 30°	30° to 35°	above 35°

• height in metres	T.G. - Tea garden	R.F. reserved forest

Based on Wenthworth's method.

Fig. 1.2 : Slope zone map of Kurseong town and its environs.

Class I (less than 10°): Areas of low slope are in the western part of the town and the Ambootia Tea Garden is located here.

Class II (10° to 20°): Areas of moderate slope are in a major part of the town, at Springdale T.G. and Chaitapani.

Class III (20° to 30°): Areas of moderately high slope are found in the northern, eastern and south-eastern part of the town, at Kharebasti, St. Mary's, Chitre, Giddapahar and Gourishankar T.G.

Class IV (above 30°): Areas of high slope are found in the northwestern part of the map, southern part of the town, and at Pagla jhora area and Makaibari T.G.

From the analysis it can be concluded that most of the hillside slopes and valleys are characterised by moderate to steep slopes, which is an indicator of the youthful stage where moderately active erosion processes have not yet been able to turn the steep slopes into gentle ones.

1.3 DRAINAGE

The circulation of water in Kurseong town like in any other urban environment involves two inter linked systems: (i) the man-modified hydrological cycle and the man-created artificial water supply and (ii) waste water disposal system. The natural circulation of water is modified by the nature of urban surface, which encourages rapid run-off and decreases infiltration (Jens and Mc. Pherson, 1964; Douglas, 1976 and Kuprianov, 1977). Urbanisation affects sream channel, often causing water to flow through cities at higher velocities (James, 1965 and Lull and Sopper, 1969). Leopold (1968) summarizes the hydrological effects of urbanisation under four major headings: (i) a change in total run-off, (ii) an alteration of peak flow characteristics, (iii) a decline in the quality of water and (iv) a change in the hydrological amenities of streams.

Most of the jhoras, except Dhobikhola and Hussain Khola, are non-perennial in nature. The jhoras like Hussain Khola, Tekbir Busty jhora, Debisthan jhora, Bhagwabati jhora Kanti jhora and Ramlal jhora originates in the Dow Hill Ridge and flow towards the west. They all

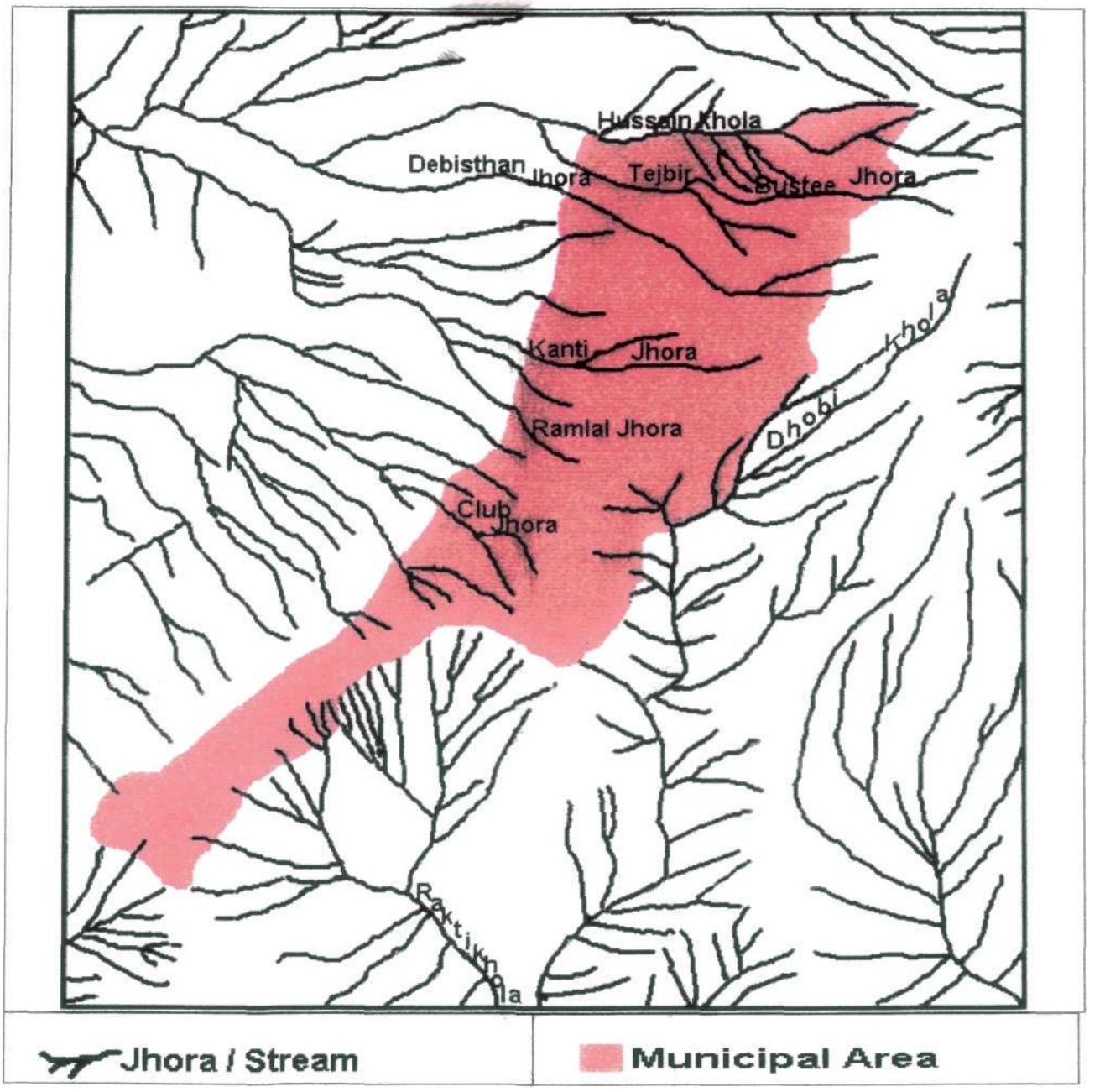
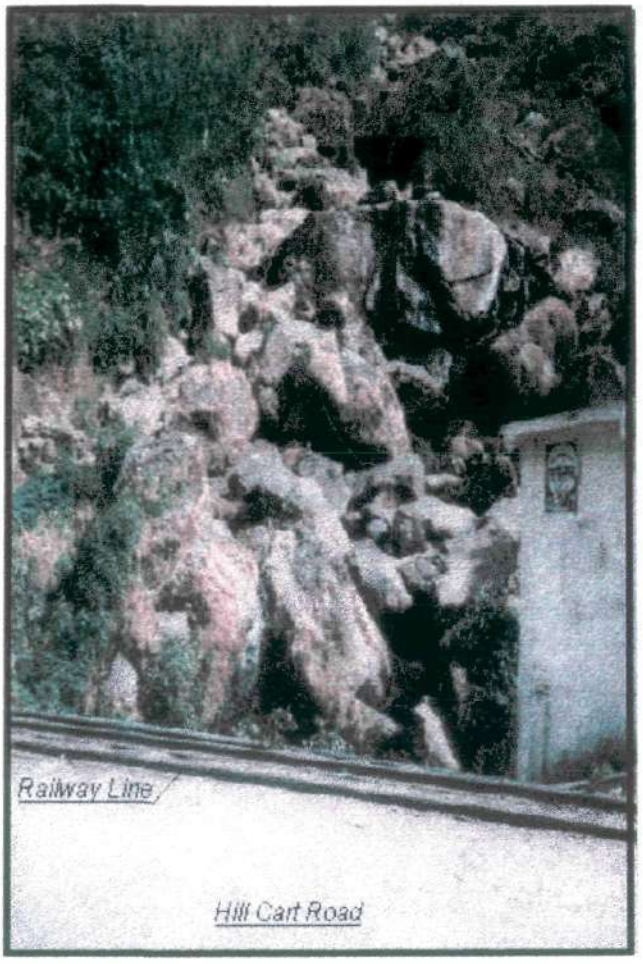


Fig. 1.3 : Drainage system in Kurseong town and its environs.

join the Rinchingtong Khola, a tributary of river Balason. The Dhobi Khola (Pic. 3) flows towards the south (Fig. 1.3). The local population for drinking and washing purposes uses the water of these jhoras especially near the source. These jhoras also act as natural drains for carrying storm and sewer water. Extraction of buildings materials is also common in some of these jhoras. The topography of Kurseong is, as such, that contrary to water logging problem

as it is in the plains, it poses the problem of scouring and erosion of jhora beds and gullies, which ultimately lead to landslides.



Pic. 3 : The Dhobi Khola.

1.4 CLIMATE

In any hill town extreme climate is not suitable for habitation but the climate of the town is moderately favourable for habitation and human activities. The climate of the town is similar to that of Darjiling town but it does not suffer from severe winter or a treacherous drop of evening temperature as in Darjiling. The meteorological report of 1995 (Table 1.2) shows that highest temperature was recorded in August with mean maximum of 25.1°C and mean minimum of 17.2°C. Lowest temperature was recorded in January with mean maximum of 10.6°C and mean minimum of 5.2°C (Fig. 1.4 a).

Table 1.2 : Meteorological data of Kurseong town (1995).

Months	Temperature in centigrade		Rainfall in mm	Number of rainy days
	Maximum	Minimum		
January	10.6	5.2	14.2	1.4
February	11.3	7.1	28.2	2.5
March	15.2	9.8	43.7	3.1
April	19.8	11.3	107.4	7.0
May	21.4	12.2	273.8	14.3
June	24.6	15.7	825.7	22.4
July	24.8	16.1	1,040.6	27.0
August	25.1	17.2	903.7	25.9
September	24.5	16.4	633.0	19.9
October	22.7	12.7	158.7	6.3
November	17.1	8.4	17.0	1.1
December	13.1	6.5	6.3	0.6
Annual	13.9	9.1	4,025.3	131.4

Rainfall is generally heavy in Kurseong town during monsoon and its annual rainfall in 1995 was 4025.3 mm. July was the rainiest month with 1040.6 mm of rainfall (Fig. 1.4 b) and the total rainfall during the four months (June to September) was 3403 mm. This shows that about 85 percent of the total rainfall occurs during these four months. There were about 131 rainy days in 1995. Due to its location near the forest and at a higher altitude, rainfall at Dow Hill is greater than at the centre of the town. During monsoon the weather is generally foggy but from October till April weather is usually dry, clear and fog free. The atmosphere is highly

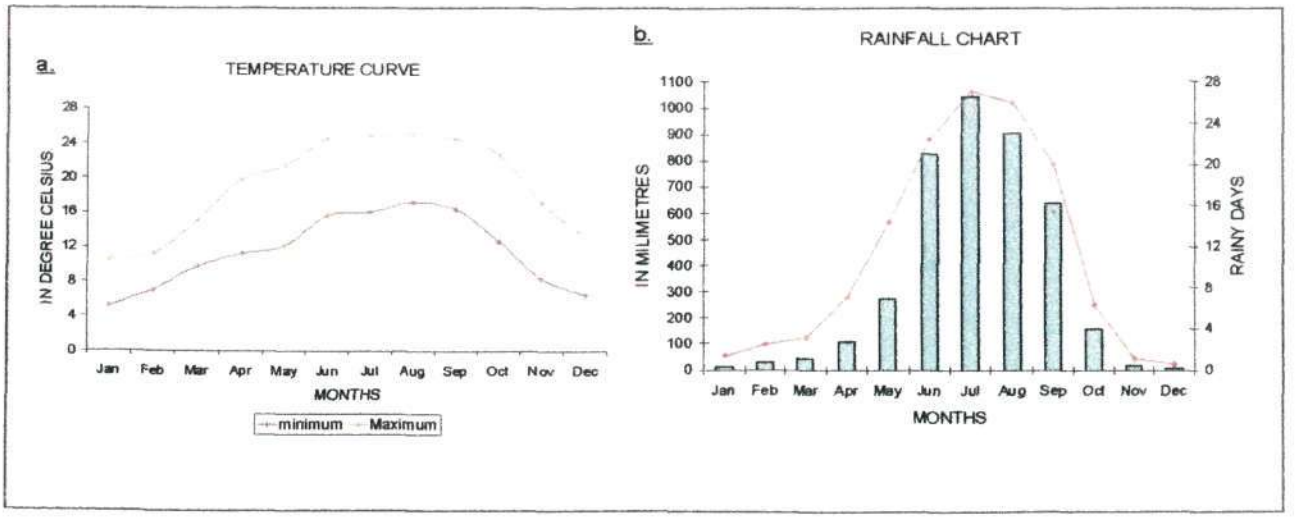


Fig. 1.4 : (a) Temperature curve and (b) Rainfall chart of Kurseong town (1995).

humid through out the year and relative humidity was 75 percent in winter and 93 percent in summer in 1995.

During the period November to May upper winds over the Himalayan region are predominantly westerly. With the setting in of the monsoon, however, there comes a conspicuous reduction in wind speed persisting until the approach of winter. Surface winds in Darjiling district have usually an easterly component. From November and throughout the winter prevailing wind direction is east-northeast. In the spring and unto June there is a tendency for a west or southwest component to enter and in the monsoon (June to September) prevailing direction is east-southeast.

1.5 SOIL

Previously the area was covered by forest but later on tea plantations came up due to suitable climate and edaphic conditions. Thus soil is very important for the growth of agriculture as well as the town.

The soil of the upland is usually red and gritty while that of the plains is dark and more fertile. Red and yellow soils have developed on the gneiss and schist in the higher slopes of the Darjiling Himalayas. The greater portion of the hilly area lies on Darjiling gneiss, which most commonly decompose into a stiff reddish loam but may also produce almost pure sand or stiff red clay. The colour of the red soil derived as it is by meteoric weathering from gneisses and schist is due more to wide diffusion than to high proportion of iron content. The type of soil is mainly siliceous and aluminous, with free quartz as sand. It is usually poor in lime, magnesia, iron oxide, phosphorous and nitrogen, but fairly rich in potash, some areas being quite rich in potassium derived from the muscovite and feldspar present in the gneiss.

The podzolic soils in the hilly areas are suitable for the cultivation of tea. Parent material variations exert a stronger influence on soil characteristics of the Darjiling Himalayas than climate or vegetation. In this area, there is a topsoil of about 3 to 5 meters near the crest of the ridges, but the thickness decreases downwards and the lower slopes are generally covered with boulders rolled down from the top. On the Darjiling gneiss there is a cover of reddish, sticky soil. The soil everywhere is residual, i.e. derived by the weathering of the underlying rocks. Weathering is selective in the Darjiling gneiss and proceeds along some

susceptible bands i.e. mica rich bands in preference to quartzose bands and also along joint and sheer planes. As a result, blocks of fresh rocks are generally found encircled on all sides by highly weathered rocks of the nature of clay. The clay is found mixed up with grains of quartz, feldspar and flakes of mica. This has got an important bearing on the landslides.

1.6 FLORA AND FAUNA

The north-eastern part (Dow Hill) of Kurseong town is covered by reserved forest (Pic. 4). The richness and variety of vegetation in Kurseong region received a vivid description in the Himalayan journals of Sir Joseph Dalton Hooker as far back as in 1854 with "the oak flowering, the birch bursting into leaf, the violet chrysosplenium, stellaria and arum, vaccinium, wild strawberry, maple, geranium and bramble. A colder wind blew here; mosses and lichens carpeted the banks and road sides...one mass of blossom, specially the white orchids Calegynes, which bloom in a profuse manner, whitening their trunks like snow".

Pic. 4 : The reserved forest at Dow Hill.

Plant life in the town no doubt differs significantly from what had been in the past, but the higher riches of the town and its surroundings even today retains all those old sylvan beauties in the deep forest of chestnut, oaks and laurels and a thick spread of Cryptomaria Japonica (Dhupi). The Cryptomaria Japonica, which now predominates the district, was

introduced from China and Japan by Mr. Fortune and passed on to Dr. Anderson for planting in nurseries at Jalapahar, Darjiling.

The Table 1.3 takes a look at the history of forest plantation in the Dhobijhora Reserved Forest (a part of Bara Shibkhola Forest).

Table 1.3: History of forest plantation in Dhobijhora Reserved Forest

Year of plantation	*Plan and species planted*	*Result*
1886	Copressus Funebris, Thuja Orientalist,Cryptomaria Japonica	Successful.
1882-91	Champ, Katus and Oak	Not very satisfactory. By far Champ did the best
1904-17	(Hatt's Plan) Coppice Felling (30yrs rotation). Plantation of Buk, Kayla, Katus, Mitha Champ, Arkanla	Coppice growth disappointing.
1922-37	(Baker's Plan) This area formed short rotation (30yrs) or fuel working circle. Clear felling and plantation with Taungya. Species planted: Maya, Champ, Tarsin, Kawla, Malata, Lali and Chiple Kawla, Oak, Eucalyptus, Cyprus, Utis (planted 13 times) and Dhupi (planted 14 times).	Soil erosion increased. Utis began to die off. Dhupi, due to its rapid growth, became valueless as timber or as fuel. Original forest crop destroyed.
1940-53	(3rd Working Plan) The area came under the hill fuel-working circle. Clear felling of Dhupi and restocking the 'clear-felled' areas with other species. 60years rotation. Retention of Coppice shoots and removal of dead or fallen Dhupis on 10-year cycle were to be followed.	Planted crops got suppressed and killed by vigorous Coppice shoots of undesirable plants. Theft, illicit felling or lopping and negligence of tending operations, etc. made the plantations patchy. Regeneration of valuable species was unsatisfactory.

The needle like leaves of Dhupi trees contain acid and as such the soil underneath become acidic with accumulation with falling leaves and this acidic soil doesn't allow any amount of undergrowth below these trees. As long a the land is under the Dhupi cover there is less fear of land slip or soil erosion, but once the forest is clear, the land during rain becomes

prone to erosion and land slip as the soil particles being acidic in nature and have little binding capacity. Moreover the absence of undergrowth also helps in this process of soil erosion.

The fauna of this area was highly varied and interesting. But with growing population and poaching, the animal life of hill forest is fast disappearing. Leopards (Panthera Pardus), which were so common in the past, are not seen now. Species of orange-bellied Himalayan squirrels, Indian Marten, Assamese Macaque, Rhesus Macaque and Jackals (Cannis Aureus) can normally be seen.

The list of avi-fauna of this area is interesting. It includes Himalayan Whistling Thrush, Black Drongos, Tickll's Warblers, Spotted Babblers, Blossom Headed Parakeets, Hodgson's Pied Wagtail, White Tailed Nuthatch, Blue Rock Thrush, White Capped Red Start, Yellow Backed Sunbird, Rufous Turtle Dove, Himalayan Barred Owlet and White Throated Fantail Flycatcher.

CONCLUSION

The growth of urban life is one of the striking developments in the history of mankind but this growth in itself is greatly influenced by geomorphic changes. The geology of the Himalayas is a complicated one and is the joint product of geological foundation and fluvial processes. F. R. Mallet was the first to classify the rocks of the Darjiling Himalayas in a systematic manner. The region around Kurseong town is mainly made up of Darjiling gneiss, which is highly micaceous. The town has moderate to high slopes, which in turn helps in fast flowing of jhoras resulting in scouring of jhora beds and landslips. The jhoras flowing through the town not only provides drinking water but also act as natural drains for carrying sewer water.

The southwest monsoon winds bring heavy rainfall to Kurseong town. The difference in altitude has resulted in having two different temperature zones in the town. The Dow Hill is much more wetter and colder than the town centre. The Darjiling Himalaya is mainly covered by podzolic soils that helped in the growth of tea plantations. Dow Hill is forested mostly with Cryptomaria Japonica, which was introduced in the Darjiling Himalaya after clearing the original forest has no value as timber or as fuel and moreover has not enriched the soil.

The historical development of Kurseong town and its different phases of growth will help in better understanding of its demography and its relation with the district. The growth of population, the different communities, their sex ratio and rate of literacy and status of working population will give an insight into the characteristic of the town.

CHAPTER II

POPULATION AND DEMOGRAPHIC STRUCTURE

INTRODUCTION

Demography that studies population has its focus on meaning the rates and trends of various population characteristics such as distribution, growth, density, composition etc. Population growth in itself helps in planning human needs like food, clothing, shelter etc. The development of town and population growth is intimately related and homologous in nature. The growth in population within a comparatively short span of time has brought in its wake several interesting demographic aspects, which have greatly moulded the structural and cultural form and life of the city (Singh, 1972). Any comprehensive geographical analysis of a region should take into account the differential growth of population. According to Trewortha number, densities, distributions and qualities of the population provide the essential background for all geography (Trewortha, 1972). Population is the central element, around which all other elements revolve and derive geographical significance. Thus, the study of population is the single most important approach to geography and in which the regional concept has its broadest application (Ghosh, 1985).

2.1. DISTRIBUTION OF POPULATION

Spatial distribution and arrangement of population are significant for the development of a town. Distribution of population refers to the way people are spaced over the surface of the earth (Ghosh, 1985). In fact, the distribution pattern of population is an eloquent expression of the synthesis of all geographical phenomena operating in the area (Singh, 1985).

The wards of the town have been classified for both area and population on the basis of their mean (X) and standard deviation (Sd.). Kurseong town, which has an area of 5.05 sq. km, recorded a population of 26,758 in 1991. Area wise, the share of the town is about 10 percent of the total urban area of the district of Darjiling excluding the towns of the plains. The town's share of population is about 16 percent of the total urban population of the hills of the district of Darjiling and about 7 percent of the total urban population of the district as a whole. There are six urban centres in the hills and three in the plains, which makes a total of

nine urban centres in the district of Darjiling. The six urban centres in the hills account for about 72 percent of the urban area and about 41 percent of the urban population of the district.

2.1.1 Area and population in wards

The population of the town is distributed in 12 municipal wards. The size of the wards is very important because of its direct relation with population. Comparing the size of the wards, it is revealed that ward XII covers the largest area (125.674 ha) where as ward VII covers only 3.125 ha. A large part of ward XII is under tea plantation. So, there is a wide difference between the area of the largest and the smallest wards. From the categorisation of the wards on the basis of area it is clear that most of the wards (8 out of 12) are small (below 42.081 ha) and are located around the centre of the town and along the Hill Cart Road where as the larger wards are located in the north (ward IX), north-east (ward I) and south-west (wards XI and XII) of the town's centre.

Unlike area, the population is the highest (3,722) in ward III and the lowest (1,215) in Ward VI (Appendix). So, the size of the wards in terms of population differs like that of area. The classification of wards made on the basis of population (Table 2.1) shows that population in 58 percent of the wards is below the average population of 2,230 and it is high (above 2,740) in three wards. From Fig 2.1 the location, area and population of the wards can be identified and it shows that the wards lying mainly at the centre of the town are smaller in size as well as in population. The size of wards is totally depended on administrative decisions. As the density of population is high at the centre of the town, the size of the wards

Table 2.1: Number of wards in different categories of population size in Kurseong town.

Population	Category	Wards	Wards (No.)	Wards (%)
Below 1,725	Very Low	II, VI, VII	3	25.0
1,725 - 2,230	Low	I, IV, V, XI	4	33.33
2,230 - 2,739	Moderate	VIII, XII	2	16.67
2,739 - 3,248	High	X	1	8.33
Above 3,248	Very High	III, IX	2	16.67
Total	-	-	12	100.00

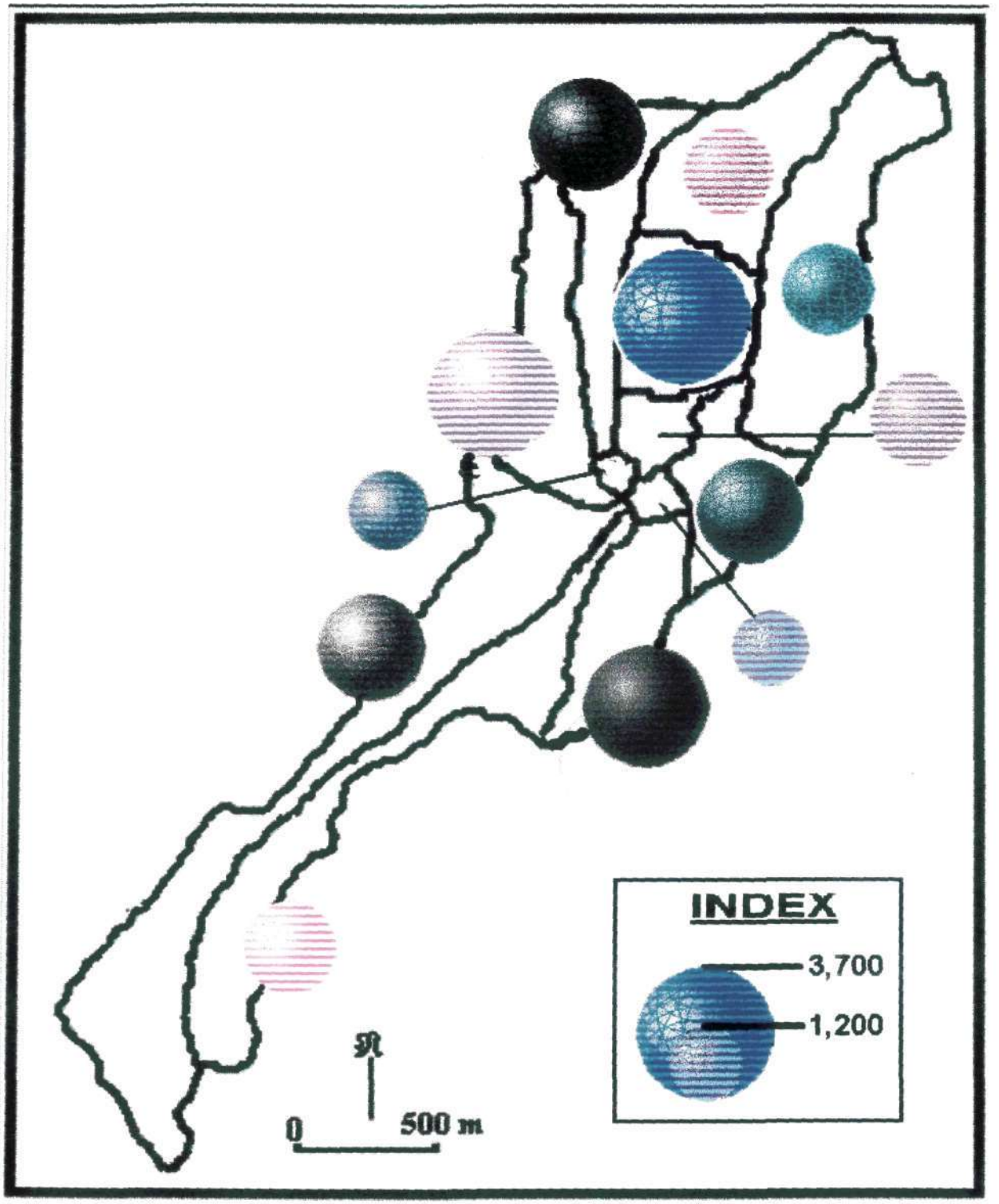


Fig. 2.1 : Population in different wards of Kurseong town.

is small. A town is divided into certain number of wards with almost equal population for proper functioning of the civic body.

The coefficient of correlation between area and population shows that the relation (0.2044) is poor in 1991. It was better (0.5918) in 1971 (Fig. 2.2). This indicates that the distribution of population in the wards is not related according to their sizes. Over crowding and over settled areas are found in certain wards of the town.

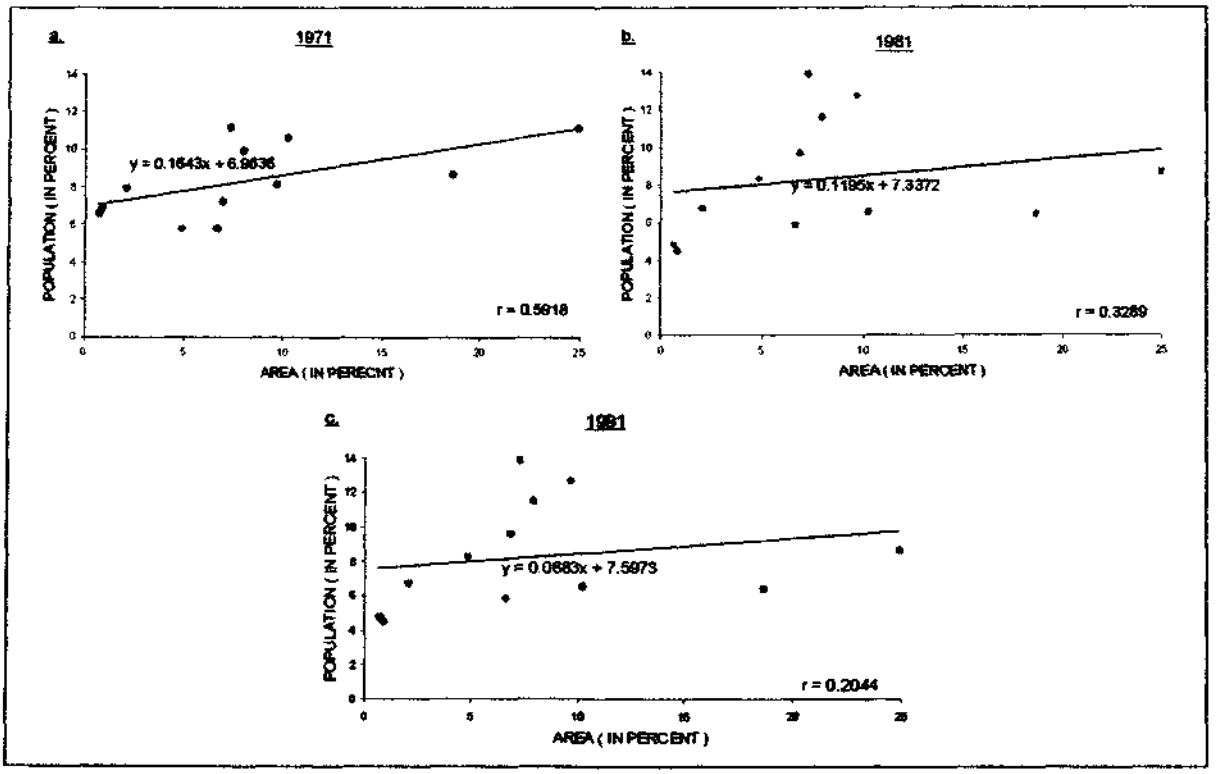


Fig. 2.2 : Scatter diagrams showing relation between area and population of Kurseong town.

2.2 POPULATION COMPOSITION

2.2.1 Scheduled Castes and Scheduled Tribes

Two fundamental and primary strata within the Hindu society are the ritually higher caste and the untouchables, officially called the Scheduled Castes (S.C.) (Bhardwaj, 1975). Another constituent of the population is the tribal people (Scheduled Tribes) recognised by the constitution. As per the Scheduled Castes and Scheduled Tribes Orders (Amendment Act, 1976) there are altogether 59 communities scheduled as Castes, and 38 as Tribes in West

Bengal (Census, 1991). Damai, Dhobi, Mehtar, Kami and Sarki communities among the S.C. and Bhutia, Sherpa, Dukpa,Yolmo and Lepcha communities among the S.T. are commonly found in the Darjiling Hills. These minority groups of people in urban areas are very often found to settle in most underdeveloped localities and owing to their low income and poor standard of living, they prefer to reside in old blighted residential areas where livelihood is less costly.

The total population of Scheduled Castes and Scheduled Tribes in 1991 was 3,111 and 1,932 respectively. The percentage of Scheduled Castes population to total population (11.63 percent) of the town was same as that of the percentage of Scheduled Castes population to the district's urban population (11.58 percent) but was less than the hill's urban population (12.95 percent). The share of Scheduled Tribes population to the total population (7.22 percent) of the town was more than the share of Scheduled Tribes population to the district's urban population (5.16 percent) but was less than the hill's urban population (11.48 percent).

Table 2.2. Scheduled Castes and Scheduled Tribes and their growth in Kurseong town.

Year	Scheduled Castes			Scheduled Tribes			S.C. and S.T.		
	Popn.	% to total popn.	Growth in %	Popn	% to total popn.	Growth in %	Popn	% to total popn.	Growth in %
1961	1,758	13.11	–	895	6.67	–	2,653	19.78	–
1971	1,740	10.59	-1.02	822	5.00	-8.16	2,562	15.60	-3.43
1981	2,240	12.44	28.24	1,359	7.55	65.33	3,599	19.99	30.48
1991	3,111	11.63	38.88	1,932	7.22	42.16	5,043	18.85	40.12

A look at Table 2.2 shows that the share of combined population of Scheduled Castes and Scheduled Tribes to that of the total population of Kurseong town has slightly decreased. The share of S.C. population to total population shows a decline but the share of S.T. population to total population shows a slight increase in 1981 with respect to 1961 and a fall in 1991.

The decadal growth of S.C and S.T. population shows an interesting trend. During 1961-71, when the growth of total population (22.48 percent) shows a positive trend, the

growth of S.C. and S.T. population (13.43 percent) shows a negative trend. During 1971-81 the growth of S.C. and S.T. population (30.48 percent) is more than that of the town and during 1981-91 the growth of S.C. and S.T. population (40.22 percent) declines and is less than that of the town (48.59 percent).

Ward wise distribution of population of S.C and S.T. in different census years is shown in Fig. 2.3. In 1971, the share of S.C. population was the least in ward VI and the maximum in ward IX where as the share of S.T. population was the least in ward III and the maximum in ward V. The share of combined S.C. and S.T. population was the least in ward III (6.49 percent) and was the maximum in ward V (25.21 percent).

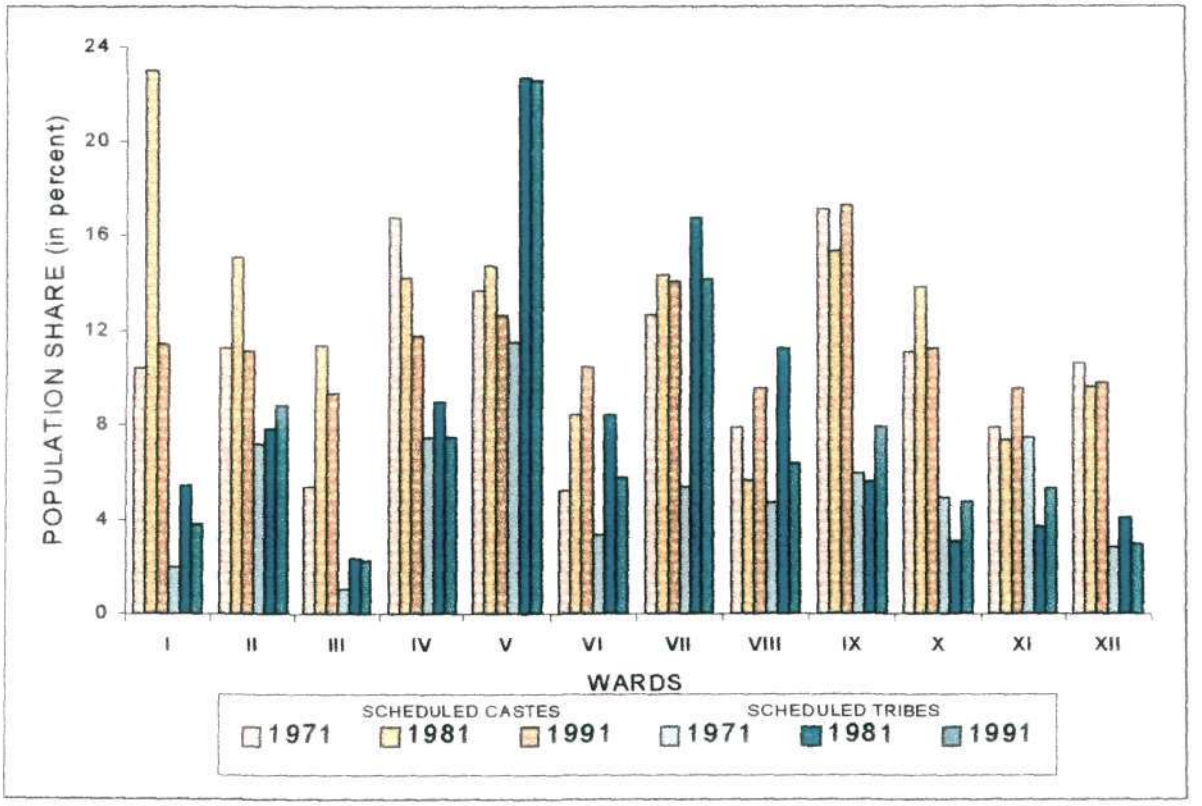


Fig. 2.3 : Share of Scheduled Castes and Scheduled Tribes populations to total population in Kurseong town.

In 1991, the share of least S.C. population shifted to ward III but the maximum share remained in ward IX where as in the case of the share of S.T. population and the combined S.C. and S.T. population the trend remained the same as that of 1971. Ward V shows the maximum share of combined population of S.C. and S.T. during the last three census years.

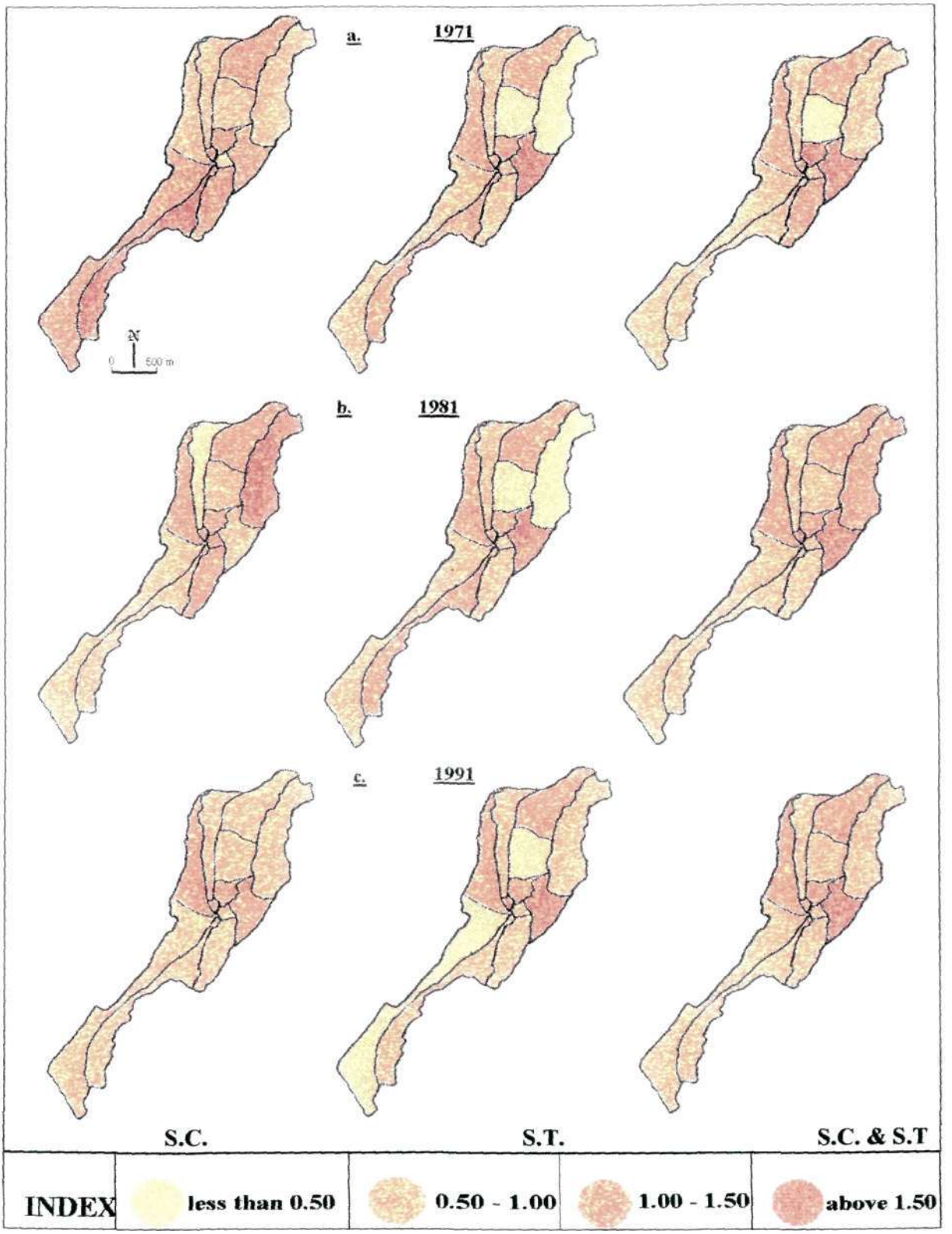


Fig. 2.4: Index of concentration of Scheduled Castes, Scheduled Tribes and Scheduled Castes and Tribes population in Kurseong town in different census years.

The spatial distribution of population of the S.C. and S.T. communities for different census years are shown in Fig 2.4, which shows the changes in concentration of S.C. and S.T. populations.

2.2.2 Sex Ratio

Under demographic studies sex composition in an urban area deserves special attention as it has a bearing on socio-economic aspect of city life. The cities have a higher proportion of male to female but Kurseong is an exception. Sex ratio does not influence marriage, birth and death rates only, but many economic and social relationships are also closely related to the balanced or disparity between males and females (Singh, 1985). Towns having low sex ratio indicate the high cost of living, scarcity of accommodation and many other demographic problems. Though the town has high sex ratio, these problems exist due to the mountainous character of the terrain.

The town has 12,769 females against 13,989 males (Census, 1991) i.e. 913 females per 1000 males. The corresponding ratio in the district's urban population and district's hill-urban population are 868 and 932 respectively. Thus, the town has a higher ratio than the district's urban average but lower than the district's hill-urban average. In the town sex ratio among the Scheduled Castes was 903 and among the Scheduled Tribes was 1,034 in 1991.

In 1879, the year when Kurseong was declared a municipality, the sex ratio was 578 females per 1,000 males, a very low figure. One reason for having such a low sex ratio may be that the work, which was going on for the laying of the railway line of the Darjiling Himalayan Railway from the plains to Darjiling, engaged only male workers. In 1951, it is observed that there is a change in the pattern and the ratio was 835 and this trend is maintained till 1991 (913). This change shows that Kurseong has become a service town rather than a commercial town.

The ward-wise distribution (Fig. 2.5) since 1971 shows that there is a wide variation in sex ratio in the town. Ward VI has recorded the least sex ratio during the census years 1971,1981 and 1991where as Ward III has shown the highest sex ratio during 1971-91.

Fig. 2.6 showing the spatial distribution of sex ratio in different census years reveals a change in the pattern of sex ratio. Other than the two wards i.e. ward VI showing the least sex

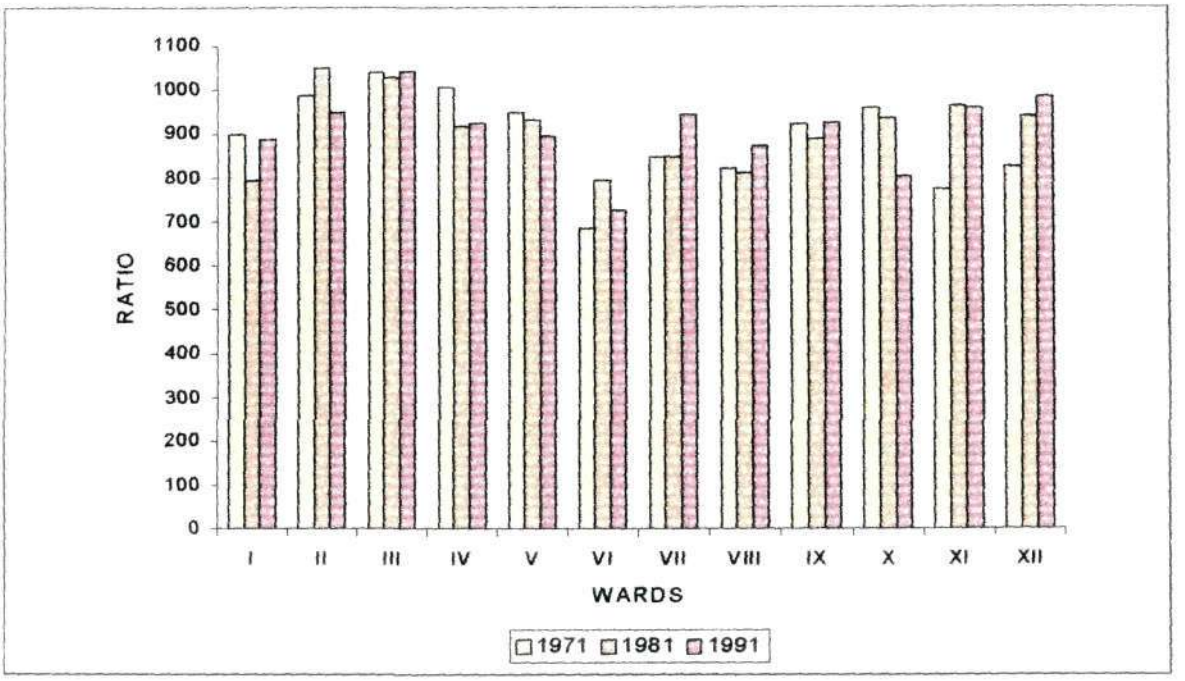


Fig. 2.5: Ward wise distribution of sex ratio in Kurseong town.

ratio and ward III showing the maximum, the rest of the wards in the town show a change in sex ratio either from very low to moderate or from high to moderate.

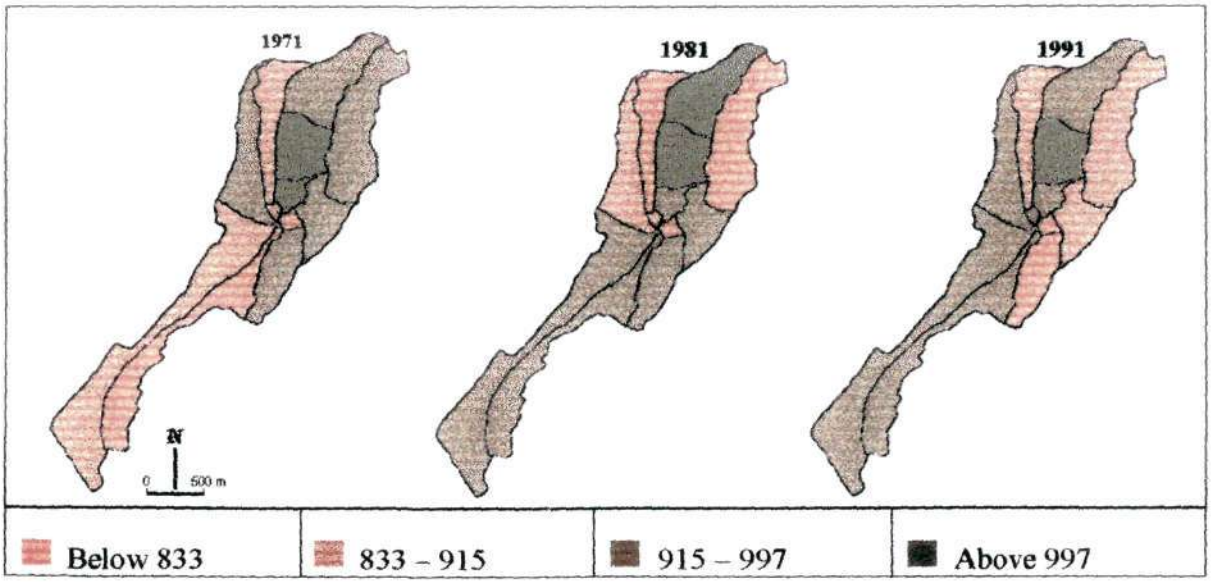


Fig. 2.6 : Spatial distribution of sex ratio in Kurseong town.

A study of growth of sex ratio during 1971-91 (Fig. 2.7) shows that the growth was the maximum in ward XI having an increase of 23.67 percent. This growth was similar to that

of the decade 1971-81. Five wards show a negative growth of which ward X shows the lowest growth (-16.2 percent). One interesting fact is that wards III and IX have shown negligible change in their sex ratio during 1971-91.

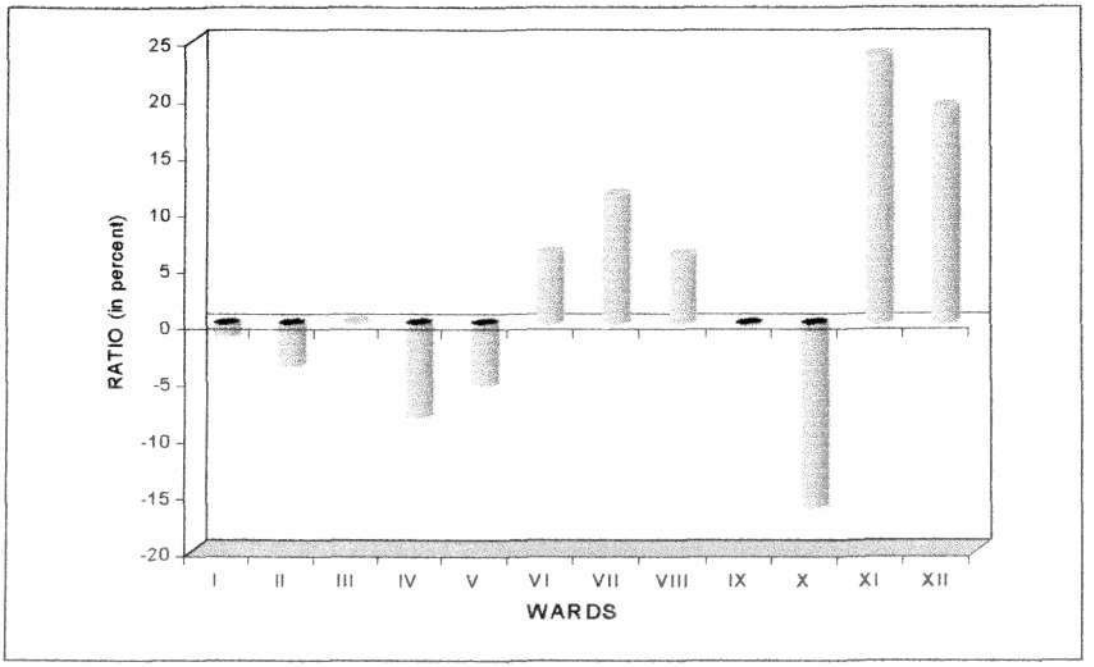


Fig. 2.7 : Growth of sex ratio during 1971-91.

2.3 DENSITY OF POPULATION

The distribution of arithmetic density of population can be explained by analysing the density pattern. Population density is a useful abstraction, assisting in the analysis of diversity of man's distribution in space (Clark, 1977). Urban population density is much more than just a ratio of people per square kilometre. Density as a variable has both policy aspects and structural ones (in terms of ground and house congestion) particularly when there is shortage in available urban land within a given range of accessibility to the city centre. Density has also amenity and liveability aspects. High densities and low densities are not necessarily related to negative and positive living conditions respectively. The changing density profiles in relation to land use, employment structure and socio-economic status provide an analogue for the ongoing process of concentration and consequent congestion, infilling and dispersal within the city (Prakasarao, 1983).

"The competition for urban sites by different land-users and differences in their abilities to pay, result in bid-rent functions of varying gradients with highest value at the location of maximum accessibility. Thus, those with higher paying abilities occupy larger spaces at prime locations of higher accessibility. The residential users, therefore, occupy smaller proportion of land near the centre and larger proportions away from it. Here again, more people want to live near the centre due to higher accessibility, however, as the land near the centre is more expensive, they consume little of it. Since land availability and extensive use increase with distance from city centre, population densities also decline with the distance. The factors influencing density in the city core and density gradients are many and changing – the age, size of residential lots, land use, centrality and central functions and transportation technology" (Berry *et. al.*, 1963).

The density of population of the town is 5,299 persons per sq. km., which is less than the district's urban average but more than the district's hill-urban average. Table 2.3 shows that the town's density population has remained less than the district's hill-urban average till

Table 2.3 : Decadal changes in density of population in Kurseong town and the district of Darjiling (urban and hill-urban).

Year	Density per square kilometre			Decadal changes in density (persons)		
	Kurseong	District (Hill-Urban)	District (Urban)	Kurseong	District (Hill-Urban)	District (Urban)
1951	2,321	2,551	1,091	-	-	-
1961	2,655	3,258	1,459	334	707	368
1971	3,252	3,404	4,523	597	146	3,064
1981	3,566	2,76 3	4,681	314	- 641	158
1991	5,299	3,273	5,717	1,733	510	1,036

1971, but has shown an increase of about 60 percent during 1971-91. Out of six urban centres in the hilly tract of the district, four have less density of population than Kurseong and only Darjiling has more density. The district's hill-urban density of population since 1981 shows a decline and this is due to the inclusion of new urban areas, which doubled in 1991 in

comparison to 1971. Decadal changes shows that the rate of change of density of population in the town is not uniform. It increased in each decade except in 1981 and the maximum was recorded (48.60 percent) in 1991.

The distribution of density of population by isopleths method (Fig 2.8) shows that Kurseong town has one centre of population. The population centre coincides with the commercial centre of the town. In the western countries, particularly in the U.S.A., high-density areas do not constitute the commercial centre, i.e. commercial areas have a low density of population. In most of the Indian towns, however, high density of population is found in the commercial areas and Kurseong is no exception of it.

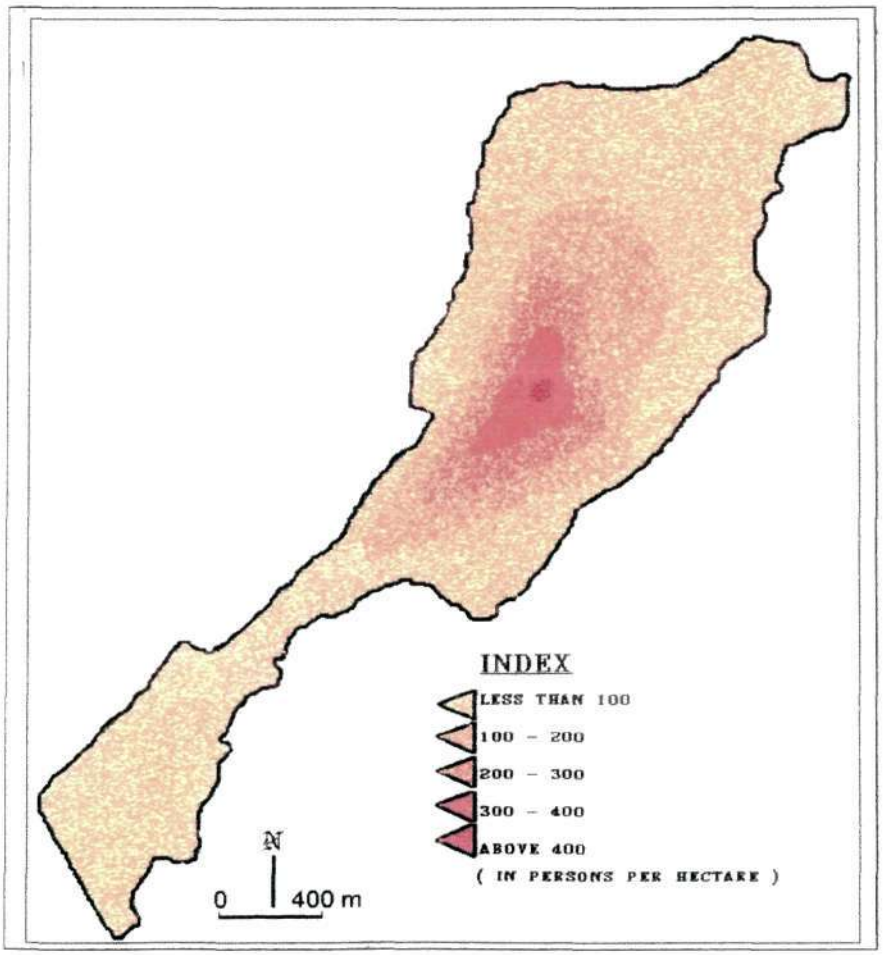


Fig. 2.8 : Density of population – 1991.

The ward wise distribution of population density in Kurseong town shows inequality. The highest density (415 persons per ha) is found in ward VII and the lowest (18 persons per

ha) is recorded in ward I (Appendix). The density of population in other wards can be compared from Table 2.4.

Table 2.4 : Number of wards in different categories of density of population in Kurseong town.

Density of population / ha	Category	No. of Wards		
		1971	1981	1991
Below 100	Low	9	9	8
100 – 200	Moderate	1	1	2
200 – 300	High	1	1	-
Above 300	Very High	1	1	2
Total		12	12	12

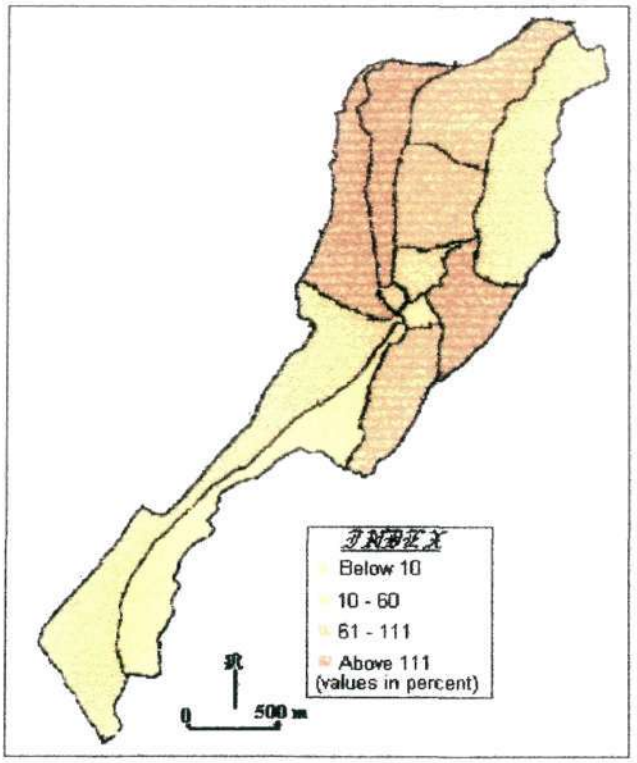


Fig. 2.9 : Change in density of population during 1971-91.

Majority of the wards have a low density of population. In 1971 and 1981 the situation remained the same but in 1991 it showed a slight change and the number of wards in

Table 2.5. Change in density of population in different wards during 1971-91.

Growth in percent	Category	Wards	No. of Wards
Below 10	Very Low	VI, XI	2
10 - 60	Low	I, IV, VII, XII	4
60 - 111	Moderate	II, III, X	3
Above 111	High	V, VIII, IX	3
Total			12

the low density category decreased with an increase in number of wards in the very high density category. It is interesting to find that the wards with low density of population are mainly covered either by forest or tea gardens. The wards with very high density of population are at the centre of the town. This may be due to the availability of various types of facilities for residential use and have resulted in vertical expansion. Change in population density during 1971-91 can be compared from Fig. 2.9. Table 2.5 reveals that very low growth has been recorded in wards VI and XI and high growth in wards V, VIII and IX.

2.3.1 Population pressure

The pressure of population during 1971-91 in different wards has remained nearly constant with eight wards in above average category and four wards in below average category. In 1971, ward XI was in above average category and ward IX was in below average category where as in 1981 ward IX was in above average and ward XI was in below average category. Except the interchanging of these two wards during 1971-81, there have been no changes in the categories during the past three census years.

In Fig. 2.10, the Lorenz Curve shows that Kurseong town is still rural in nature. Even though forests and tea gardens cover a large part of the town, the concentration of population is more near the centre of the town than in the outer areas. Still 41 percent of the land in Kurseong town is to be covered for it to become an urban centre in the true sense of the term.

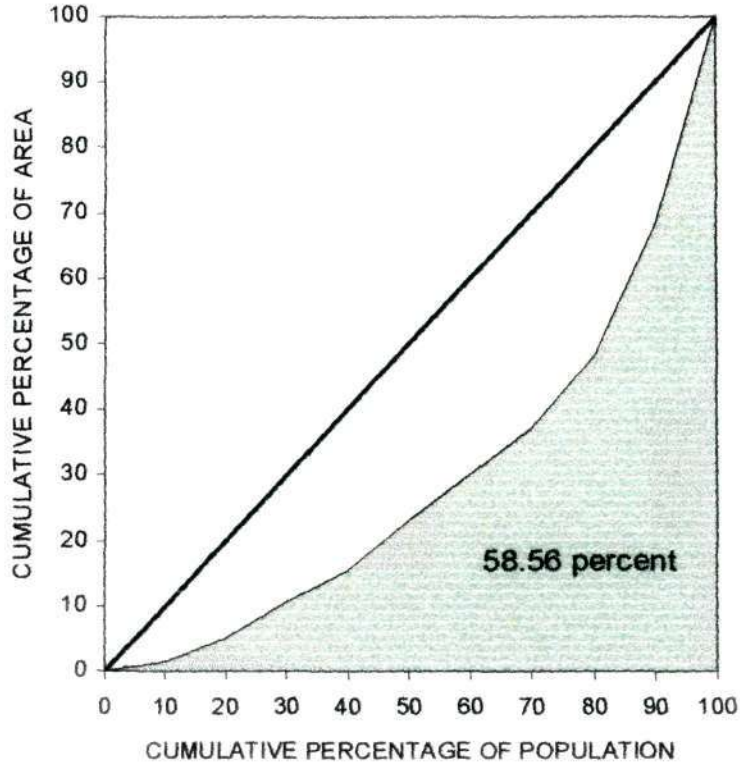


Fig. 2.10: Lorenz curve showing the degree of concentration of population in Kurseong town.

The concentration index is an important tool, which indicates the amount of population involved in movement to achieve an equitable distribution of population in different wards of a town (Sinha, 1970). The following formula has been used to calculate the concentration index of population:

C = A- P / 2, where C is the concentration index, A is the area of the ward as percentage of the town and P is the population of the ward as percentage of the town. It shows the amount of concentration of population in a town at a given time.

The concentration indices for the municipality were 25.92 percent in 1971, 29.26 percent in 1981 and 32.66 percent in 1991 (Appendix). The relationship between area and population for three census decades show that the number of wards with percentage of area more than percentage of population have decreased over the years. In 1991 the number of wards with percentage of area less than percentage of population have increased (Fig 2.11).

Thus to get a uniform distribution in all the wards of the municipality, 25.12 percent of the population in 1971 and 32.66 percent in 1991 required inter-ward movement.

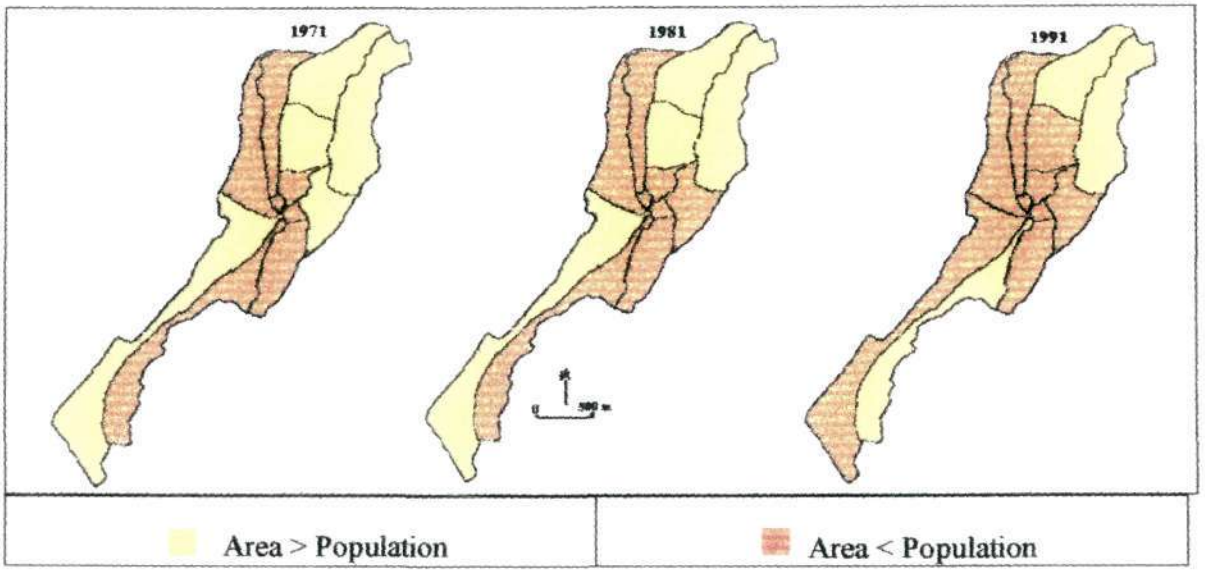


Fig. 2.11 : Spatial Gaps.

2.4 GROWTH OF POPULATION

Changes in population are more normal than stable states, so it is no surprise that observers attempt to isolate those elements, which combine to produce output measures of population (Baxter and Williams, I, 1978). A population is constantly in a state of influx. During this process the size of population varies and develops potentialities for unlimited growth (Ramkumar, 1986). The dynamics of population growth of an area over a certain length of time is the sum of the net migration in the region during the period under consideration (Singh, 1985).

At the time of formation of the municipality, the total population was 2,863. Since then it has experienced an increase in its population, though at a very slow pace. In 1991, the total population of the town was 26,758 persons. The growth rates of urban population in Kurseong, Darjiling District's hill-urban and urban during 1901-91 are shown in Table 2.6.

The decadal growth of population in the town as well as in the district (hill-urban and urban) have been positive in all the decades and during 1981-91 the town experienced a higher rate of growth of population than the district's hill-urban and urban. The town experienced the minimum growth during 1971-81 and the maximum rate of growth during

Table 2.6 : Growth of population during 1901-91.

Year	Population			Population growth in percentage		
	Kurseong	District (Hill-Urban)	District (Urban)	Kurseong	District (Hill-Urban)	District (Urban)
1901	4,469	21,393	21,393	-	-	-
1911	5,574	24,579	24,579	24.73	14.89	14.89
1921	6,445	28,703	28,703	15.63	16.78	16.78
1931	7,451	37,412	43,479	15.61	30.34	51.48
1941	8,995	47,677	58,164	14.01	27.44	33.77
1951	11,791	62,001	94,481	37.95	30.04	62.44
1961	13,410	79,166	1,44,637	14.43	27.69	53.09
1971	16,425	82,728	1,80,212	22.48	4.50	24.60
1981	18,008	1,19,067	2,82,153	9.64	43.93	56.57
1991	26,758	1,62,343	3,96,060	48.59	36.35	40.37

1981-91. Fig. 2.12 shows the decadal growth of population in the three hill municipalities and the district's urban population since 1901. Except Kalimpong, which has recorded a negative growth during 1961-71, the other two municipalities and urban population of the district as a whole have experienced a positive increase. During 1981-91, the urban population of the district and Darjiling town have experienced a slow growth where as Kalimpong and Kurseong have recorded a higher growth.

Fig. 2.13 showing the index of growth of urban population in the district's urban and hill-urban and Kurseong town shows that the growth has remained low till 1941. But after 1941, the urban population of the district started showing a faster growth than the district's hill-urban and Kurseong. This is due to an increase in urban population in Siliguri, the gateway to the North-Eastern States of India. Kurseong's index of growth has remained low till 1981 and only during 1981-91, it has recorded a higher growth of about 200 percent.

The effect of rate of growth is also reflected in the different wards of the town (Fig.

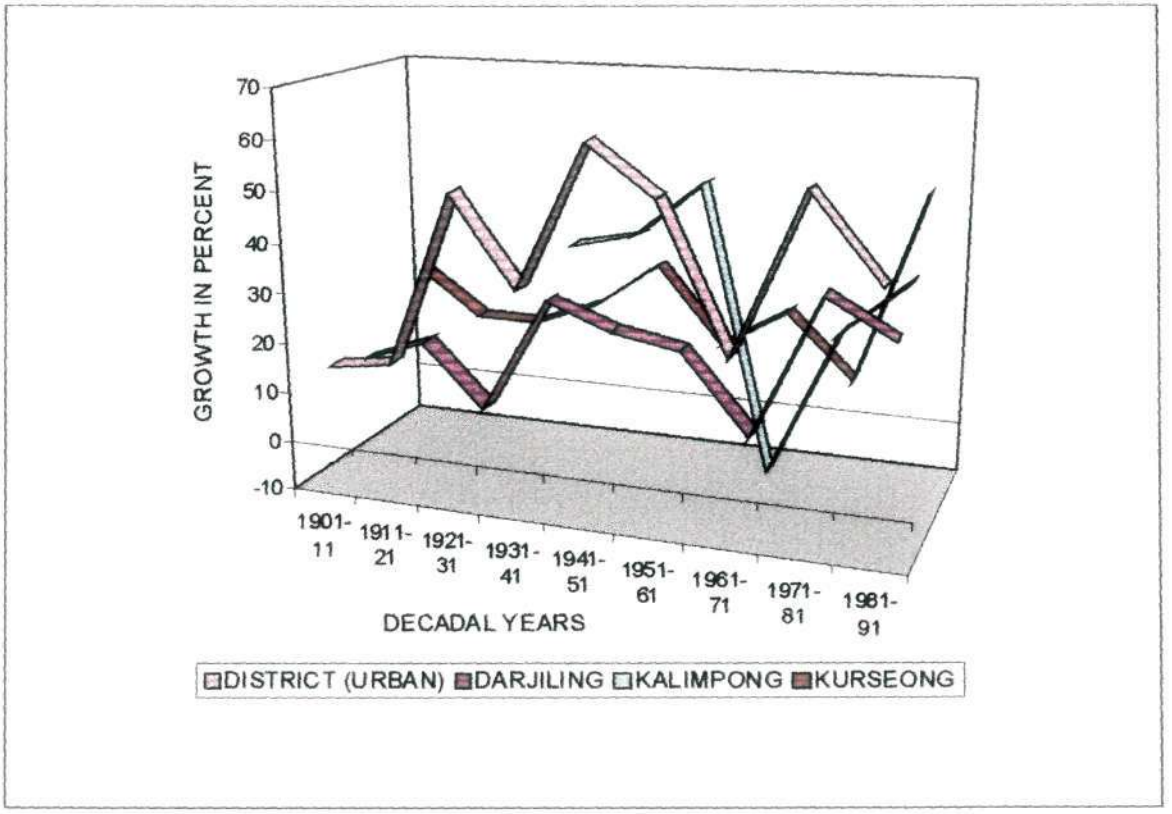


Fig. 2.12 : Decadal growth of population (1901-91).

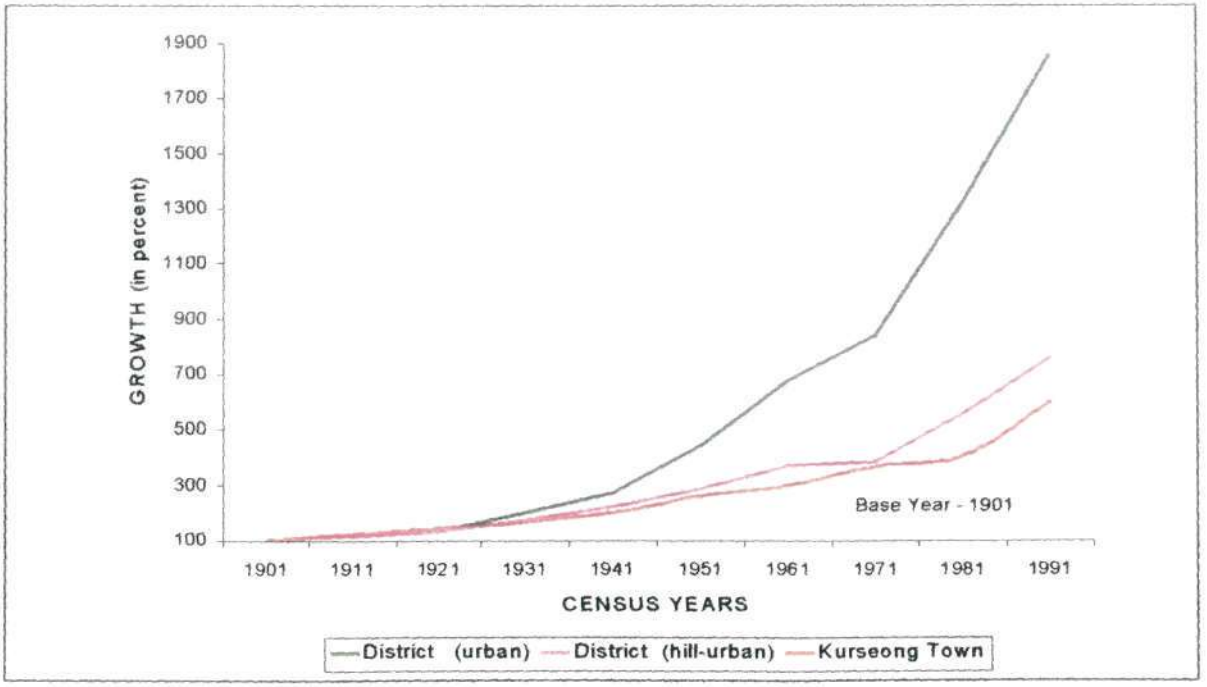


Fig. 2.13 : Index of growth of population (1901-91).

2.14). The wards of the town are grouped into six classes on the basis of percentage (Table 2.7). The growth of population was enormously high (154 percent) in ward IX and was low (7

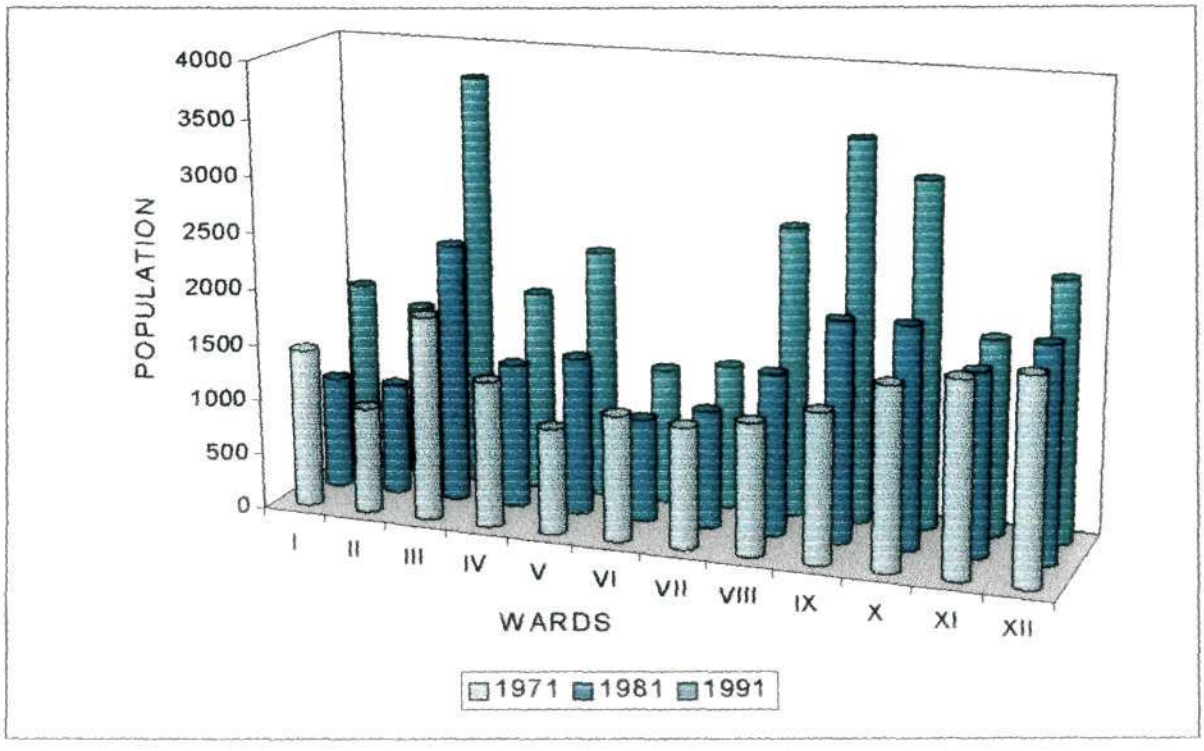


Fig. 2.14 : Ward wise distribution of population in different census years.

Table 2.7 Distribution of wards in different categories of population growth during 1971-91.

Growth in percent	Category	Wards	Wards (No.)	Wards (%)
Below 25	Very low	I, VI, VII, XI	4	33.33
25 - 50	Low	IV, XII	2	16.67
50 - 75	Moderate	II	1	8.33
75 - 100	Moderately High	X	1	8.33
100 - 125	High	III, VIII	2	16.67
Above 125	Very High	V, IX	2	16.67

percent) in ward VI during 1971-91. Moreover, the population has increased significantly in as many as 6 wards in comparison to the overall growth of 63 percent in the town during 1971-91. The growth of population in different wards is mainly due to natural growth and immigration.

A significant percentage of population from Nepal and adjoining rural areas of the district (hill) has settled in different wards of the town. In wards IX and V there have been an influx of particular groups *viz.* Sherpas and Chetris, where they have formed settlements of their own community. In ward I the growth is restricted due to non-availability of land, which is mostly under reserved forest or Government departments. Low rate of growth of population is also found in wards VI and VII, which are centrally located where paucity as well as high value of land is common. Here, lack of vacant lands has resulted in vertical expansion.

Table 2.8 Number of births and deaths in Kurseong town (1995-97).

Year	No. of births	No. of deaths	Natural increase in population	Increase in percent
1995	712	252	460	-
1996	651	243	408	47.0
1997	670	257	413	32.24

Data for births and deaths have been collected from the municipality for determination of natural rate of growth of population in the town and Table 2.8 shows the rate of growth for 3 years.

2.4.1. Future population growth

As the natural growth rate for Kurseong Municipality does not give a correct picture, the study of mortality and fertility does not help in forecasting the future population. Any estimate of population in future is fraught with uncertainties as there is no fixed law of population growth, and various techniques of projection are apt to give widely varying results (Ram, 1969). In the absence of any other suitable methods, methods of arithmetic progression, geometric progression and extrapolation have been attempted for estimating future population of Kurseong town.

The year 1951 has been taken as the base year for calculation as maximum migration of people from Nepal to India after the Independence took place during that time (Census, 1951). The arithmetic and geometric growth rates during 1951-81, when used for estimating population of 1991, gives result that are less than the actual count of 1991. This is due to the low rate of growth during 1951-81 and sudden increase during 1981-91. Considering the two growth rates and extra-polation of 1951-91 trend line on semi-log graph the future population of the town is estimated in Table 2.9. The mean estimate for 2001 shows that the population the town will be 33,965, but a conservative estimate of the town's population in 2000 is about 40,000.

Table 2.9 Future population growth projections.

Year	Actual Population	Arithmetic Progression	Geometric Progression	Extrapolation Progression	Mean Estimate
1991	26,758	-	-	-	-
2001	-	30,519	32,877	38,500	33,965
2011	-	34,279	40,410	66,500	47,063

2.5 MIGRATION

Migration has its relative role in the growth of population. The study of migration to city is an essential aspect of planning. The concepts of migration along with natural increase have great significance in population change. The demographic dynamics of the towns particularly during the post-Independence period is not only reflected in the phenomenal high rate of its population increase, but also in the migration of its inhabitants to some extent (Singh, 1985).

Migration streams in India are sectoral – to rural from rural and urban, and to urban from rural and urban; and territorial – short distance (intra-district), medium distance (inter-district) and long distance (inter-state). It is the urban pull that operates over long and medium distances. Migration from one urban to another urban area is on the increase (Prakasarao, 1983).

The distinguishing characteristic of migration is that its direction and volume are entirely the results of human actions and reactions to situations. Hence, it is not easy to arrive at universally acceptable definitions and methods and of measurement (Ramkumar, 1986). The causes of migration are described as due to 'push and pull factors'. Some of the important push-pull factors of the town are:

(i) Push factors – (a) unemployment and under employment in the rural areas, (b) low wage and salary of agricultural workers, (c) desire for better urban life; and

(ii) Pull factors – (a) better economic prospects, (b) better way of living, (c) better working conditions and employment opportunities in trade and commerce, (d) increasing demand for labour and skill in tertiary activities, (e) better transport and communication facilities between rural areas and the town.

Under conditions of rapid population growth as a result of natural increase (i.e., births minus deaths), the push factor operates everywhere and not only in the rural areas. In fact there is a 'push back' factor in urban areas. In India, the urban labour force is sizeable, the urban employment rates are high and there also exist pools of underemployed persons. All these factors act in combination as deterrents to the fresh flow of migrants from rural to urban areas. If new employment opportunities are created in the urban areas, the first persons to offer themselves for employment are the marginally employed persons already residing in the urban areas, unless, of course, special skills are required. Thus, paradoxically enough, rapid population growth becomes a factor in slowing down the migration from rural to urban areas (Bose, 1973).

The town has experienced a very slow rate of growth since its formation. There are two occasions when the rate of growth were slightly higher than the general trend – one during 1941-51 when there was immigration from Nepal and the other during 1981-91, when the rate of growth of population was the maximum for the town due to natural increase as well as migration.

2.6 LITERACY

Among the different qualities of population, literacy perhaps is the most important one. A very low degree of literacy is an obstacle to economic growth. The basic minimum

measurement of educational status is the degree of literacy. But it is very difficult to measure the degree of literacy in accurate terms (Ghosh, 1985). As per Census' definition 'a person who can both read and write with understanding in any language is taken as *literate*'. It is not necessary that a person who is literate should have received any formal education or should have passed any minimum educational standard. In the 1991 Census, all children aged 6 years or less are treated as illiterate even though the child is going to school. In the previous censuses of 1971 and 1981 children of the age of 4 years and below were treated as illiterate.

The percentage of literate to total population in Kurseong town was the highest in West Bengal in 1981. In absolute terms the share of literate has been increasing after Independence i.e. since 1951 and a look at Table 2.10 shows that percentage had increased from 44.47 percent in 1951 to 75.88 percent in 1991. In 1991, the share of literate to total population in the district's urban and hill-urban was 67.61 percent 71.8 percent respectively and this shows that the percentage of literate in Kurseong town is more than that of the

Table 2.10 : Share of literate to total population (1951-91).

Year	Total population	Literate	Share of literate	Decadal change of literate (%)
1951	11,719	5,211	44.47	-
1961	13,410	7,151	53.33	37.23
1971	16,425	9,603	58.47	34.29
1981	18,008	12,790	71.02	33.19
1991	26,758	20,305	75.88	58.76

district's (urban and hill-urban) average. Although the number of literate in the town has increased during the last four decades, the decade-wise growth has remained below 40 percent till 1981 and only during 1981-91 there was an increase of about 59 percent.

Among the Scheduled Castes and Scheduled Tribes living in the town the share of literate to their respective population was lower than the town's average in 1991. The percentage of literate among the S.C. communities (68.76 percent) was lower than that of the S.T. communities (71.22 percent). The share of literate among the S.C. and S.T. communities in the town was better than their counterparts in the district's urban and hill-urban average.

For the Scheduled Castes the averages for the district's urban and hill-urban were 52.73 percent and 64.31 percent respectively and for the Scheduled Tribes the averages for the district's urban and hill-urban were 69.0 percent and 70.68 percent respectively. The percentage of female literate to male literate among the Scheduled Castes was slightly lower (43.1 percent) than the town's average (44.5 percent) whereas among the Scheduled Tribes the percentage was slightly higher (47.6 percent) than the town's average.

One reason for this growth of literate in the town may be due to the increase in number of educational institutions over the decades. A ward wise study of the growth of literate (Fig. 2.15) shows that maximum increase (123.9 percent) was in ward V during 1971-81 and during 1981-91 it was in ward VIII (108.25 percent). This figure is much higher than total growth of literate for the town as a whole, which was 33.2 percent during 1971-81 and 58.0 percent during 1981-91.

In 1991, the number of male literate to female literate in the town (55.52 percent) was slightly lower than the district's urban average (57.43 percent) but similar to that of the

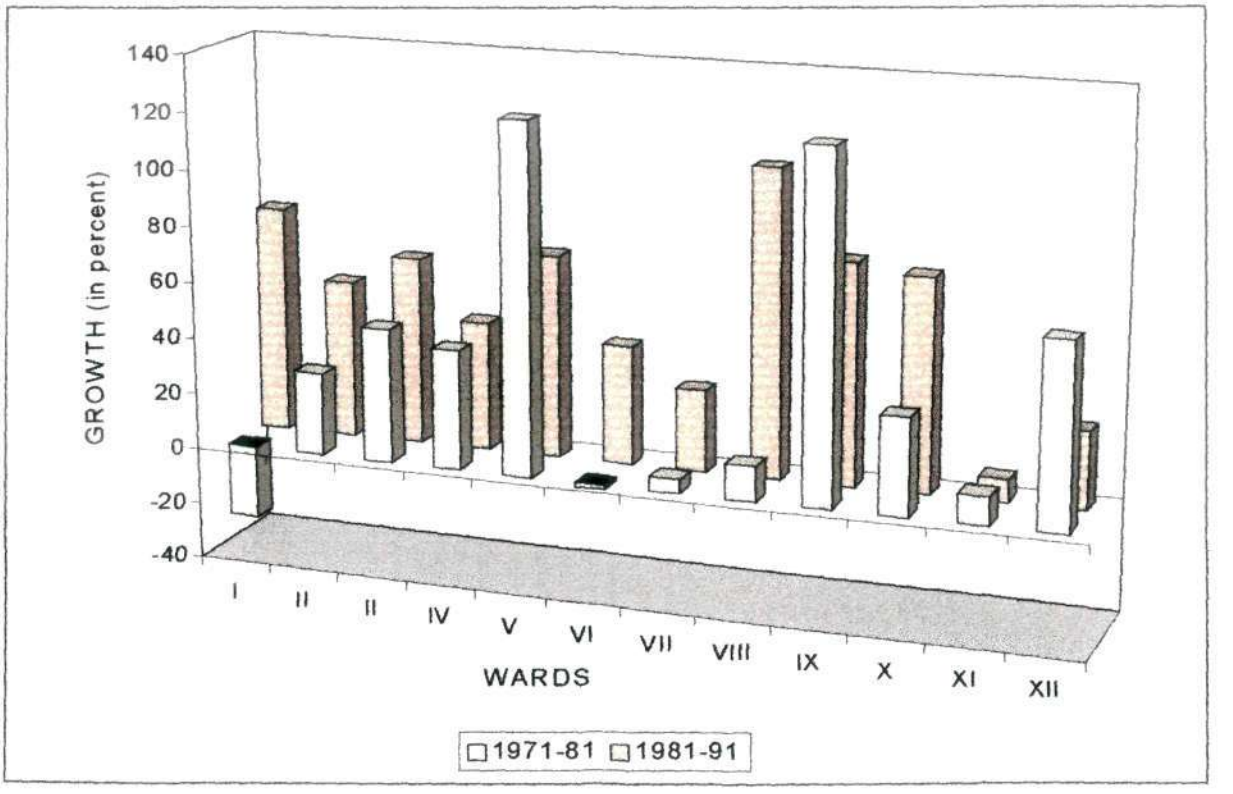


Fig. 2.15 : Ward wise growth of literate.

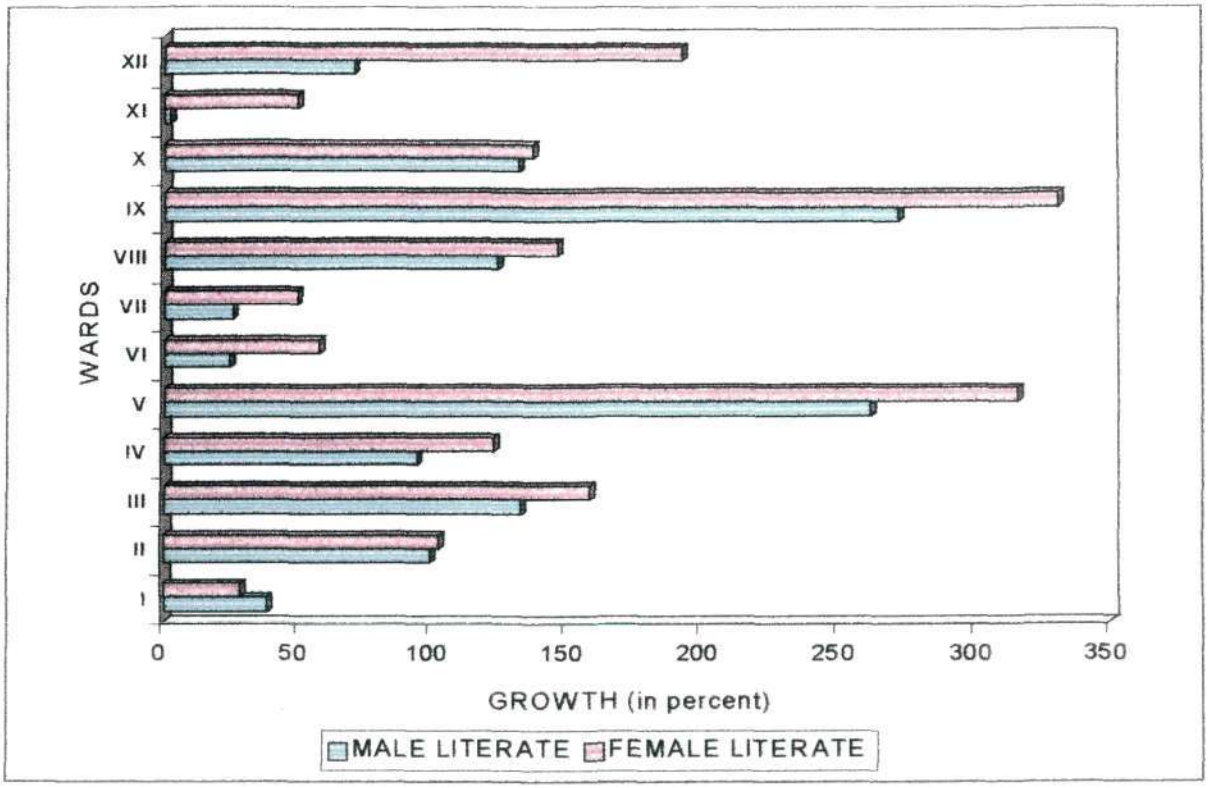


Fig. 2.16 : Growth of male and female literate during 1971-91.

district's hill-urban average (55.59 percent). In the town the number of male literate has always remained higher than the female literate during 1971, 1981 and 1991.

A look at Fig. 2.16 showing the growth of literate – male and female during 1971-91 in different wards of the town reveals that the growth of male literate over female literate is less during the said period. Growth of literate – male and female in the town was 95.87 percent and 131.97 percent respectively. Maximum growth of male and female literate has been recorded in ward IX, where for male it was 272.41 percent and for female it was 331.62 percent. Minimum growth of male literate has been recorded in ward XI and of female literate in ward VII.

2.6.1 Relationship among different parameters of literate – 1971-91.

The coefficient of correlation among different parameters [total population (Tp), total literate (Tl), male population (Ml), female population (Fl), male literate (Ml) and female literate (Fl)] that have been taken into consideration for analysing the status of literate in the

Fig. 2.18: Scatter diagrams showing relation between different parameters of literate – 1971.

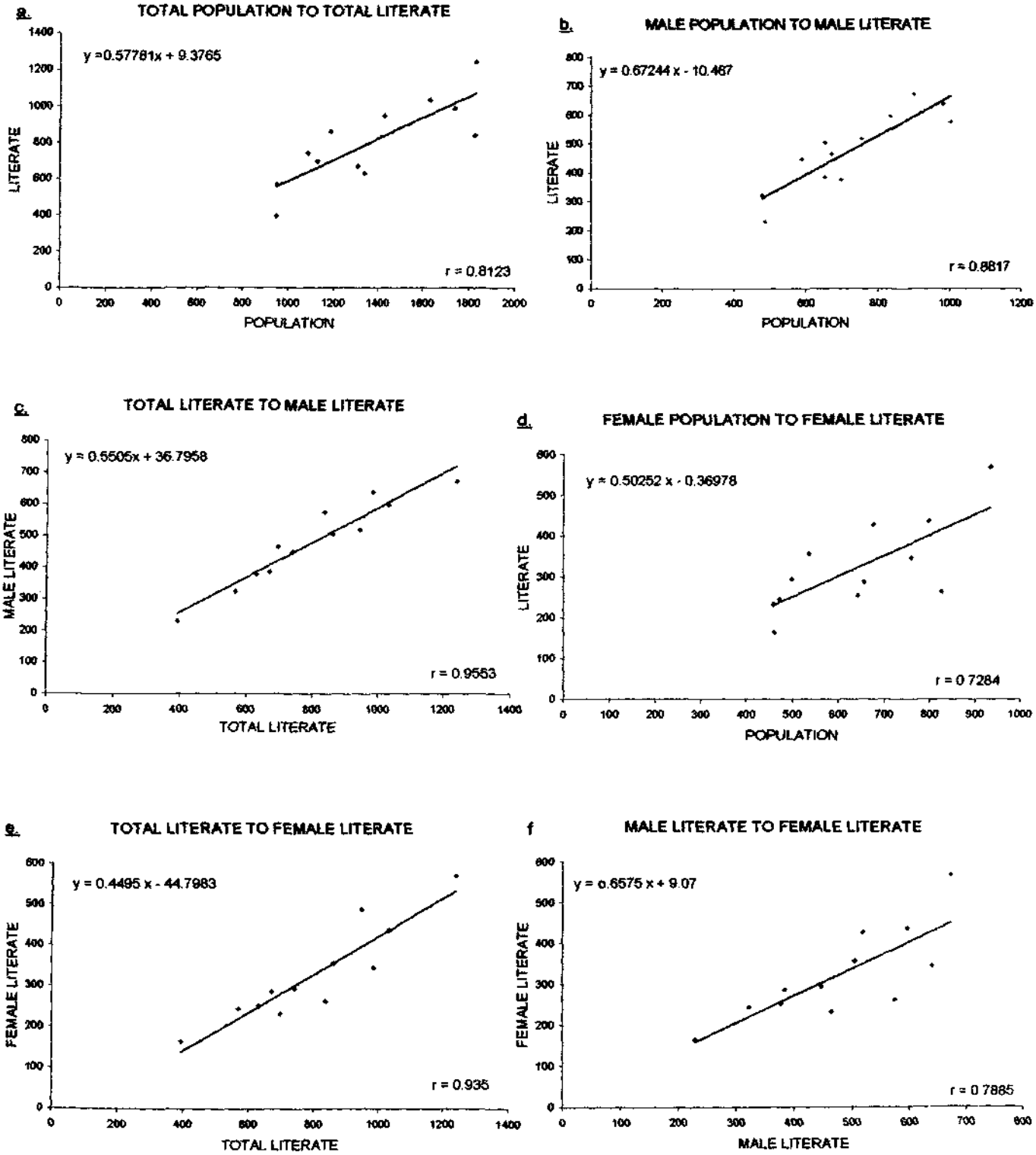
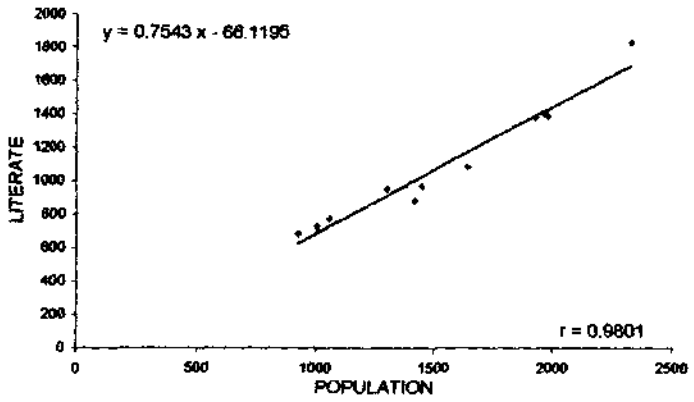
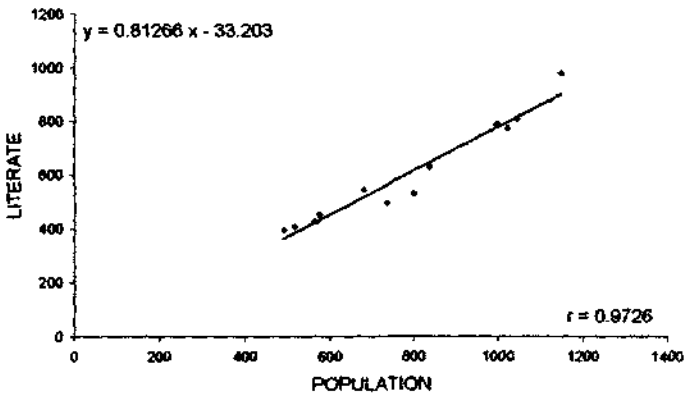


Fig. 2.19: Scatter diagrams showing relation between different parameters of literate – 1981.

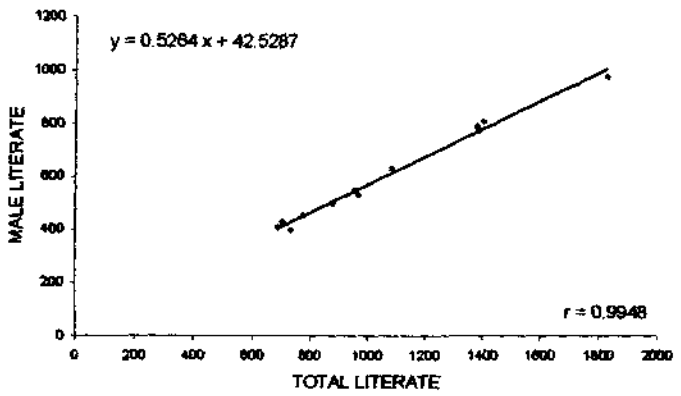
a. TOTAL POPULATION TO TOTAL LITERATE



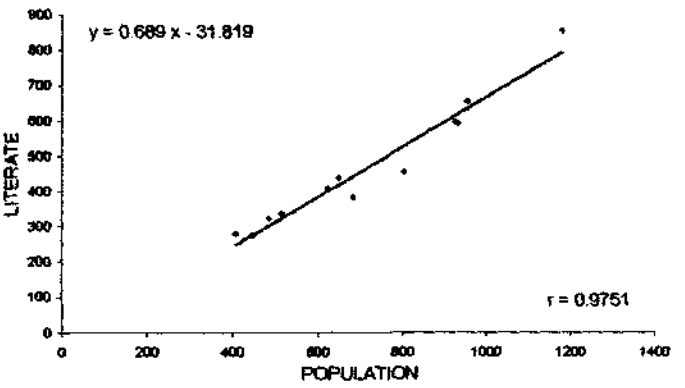
b. MALE POPULATION TO MALE LITERATE



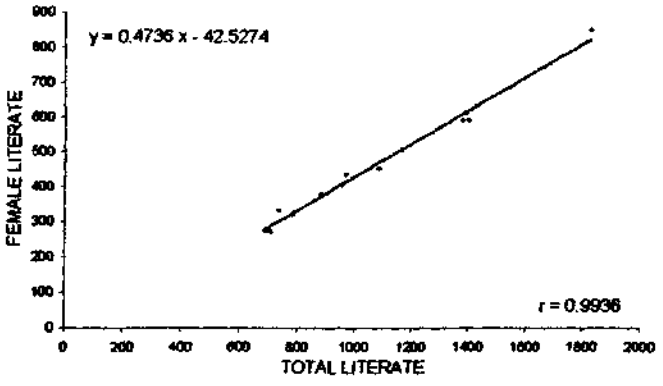
c. TOTAL LITERATE TO MALE LITERATE



d. FEMALE POPULATION TO FEMALE LITERATE

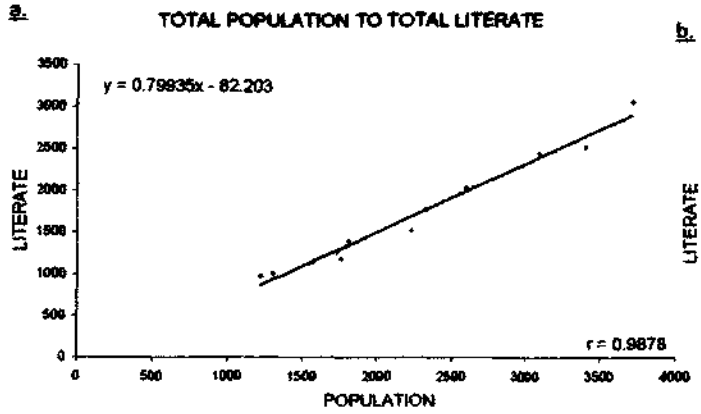


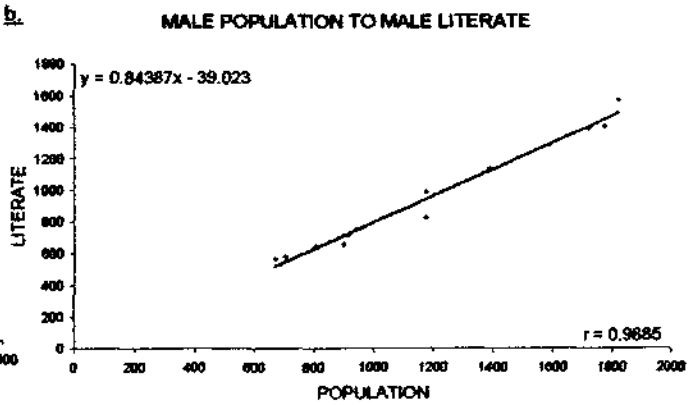
e. TOTAL LITERATE TO FEMALE LITERATE

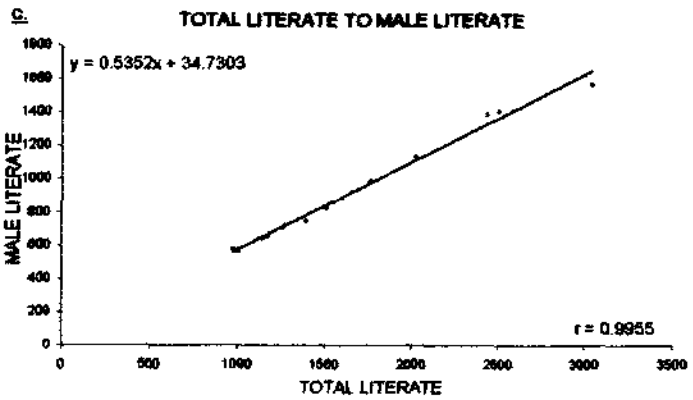


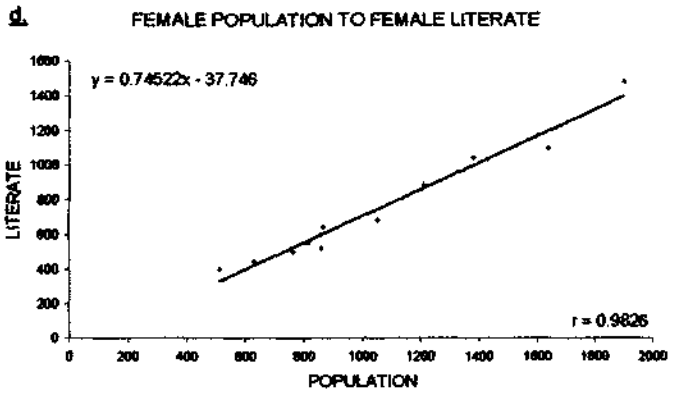
f. MALE LITERATE TO FEMALE LITERATE

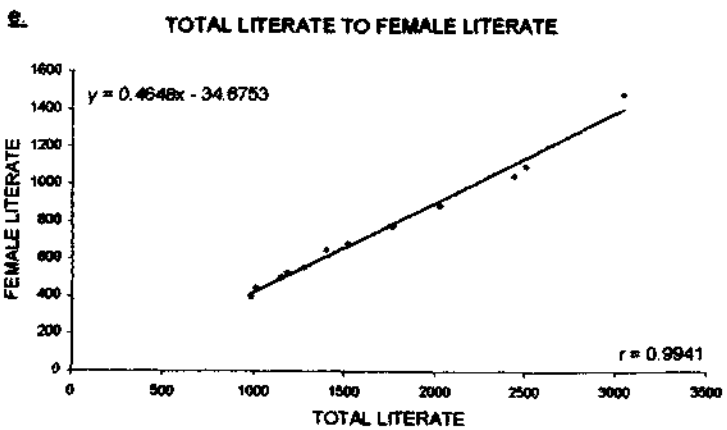
Fig. 2.20: Scatter diagrams showing relation between different parameters of literate – 1991.











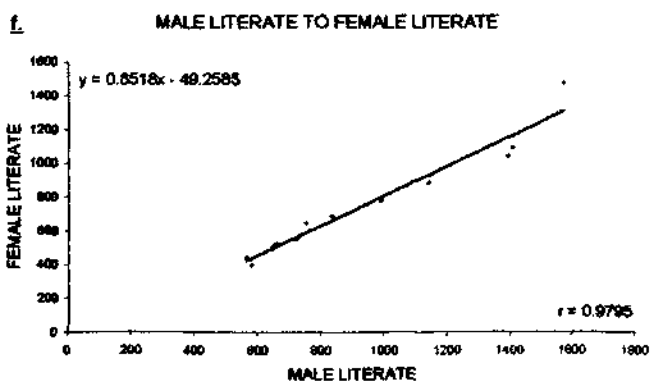


Table 2.11 : Relationship among different parameters of literate during different census years.

Year		y	r	Remark
1971	a.	yTpTl = 0.5778 xTp + 9.3765	0.8123	Good
	b.	yMpMl = 0.6724 xMp - 10.467	0.8817	Very good
	c.	yTlMl = 0.5505 xTl + 36.7958	0.9553	Very good
	d.	yFpFl = 0.5025 xFp - 0.3697	0.7284	Good
	e.	yTlFl = 0.4495 xTl - 44.7983	0.9350	Very good
	f.	yMlFl = 0.6575 xMl + 9.07	0.7885	Good
1981	a.	yTpTl = 0.7543 xTp - 66.1195	0.9801	Very good
	b.	yMpMl = 0.8126 xMp - 33.203	0.9726	Very good
	c.	yTlMl = 0.5264 xTl + 42.5287	0.9948	Very good
	d.	yFpFl = 0.689 xFp - 31.819	0.9751	Very good
	e.	yTlFl = 0.4736 xTl - 42.5274	0.9936	Very good
	f.	yMlFl = 0.8803 xMl - 69.073	0.9772	Very good
1991	a.	yTpTl = 0.7993 xTp - 82.203	0.9878	Very good
	b.	yMpMl = 0.8438 xMp - 39.023	0.9885	Very good
	c.	yTlMl = 0.5352 xTl + 34.7303	0.9955	Very good
	d.	yFpFl = 0.7452 xFp - 37.746	0.9826	Very good
	e.	yTlFl = 0.4648 xTl - 34.6753	0.9941	Very good
	f.	yMlFl = 0.8518 xMl - 49.2585	0.9795	Very good

town during different census years (1971, 1981 and 1991) are shown in Figures 2.17 (a-f), 2.18 (a-f) and 2.19 (a-f) respectively. In 1971, the relation between (a) total population (xTp) and total literate (yTpTl), (d) female population (xFp) and female literate (yFpFl) and (f) male literate (xMl) and female literate (yMlFl) were good (0.8123,0.7284 and 0.7885 respectively) (Table 2.11). During the same year, the relation in the other cases (b) male population (xMp) and male literate (yMpMl), (c) total literate (xTl) and male literate (yTlMl) and (e) total literate (xTl) and female literate (yTlFl) were very good (0). The relation between different parameters in 1981as well as in 1991 was very good. From the analysis it can be said that the relation between the different parameters improved in 1991 in comparison to 1971 and 1981.

2.7 OCCUPATIONAL PATTERN

Occupation reveals the nature of economic development and sophistication of a country (Ghosh, 1985). Occupation determines the individual's relationship with other individuals in the same and other occupations (Hall, 1975). Occupational structure is the unitary relationship pattern of the three occupational components – primary, secondary and tertiary working population of an area, which constitute the core of the economic system. Among all the social attributes of a given individual or group, occupation is of paramount

importance. It is particularly significant for the population analysis, since to a considerable extent, the nature of work determines the surroundings both physical and cultural (Smith, 1948).

Total workers in Kurseong town in 1991 was 6,536 (male-5,242 and female-1,294) or 24.4 percent of the total population where as in the district's urban and hill-urban the percentages were 29.5 percent and 24.8 percent respectively. This shows that the share of workers to total population in the town is lower than the district's urban average and marginally less in comparison to district's hill-urban average. The Census of 1991 also reveals that the share of total workers to total population has declined in comparison to 1971 and 1981. In 1991, even though the share of combined population of Scheduled Castes and Scheduled Tribes to total population of the town was about 19 percent, the share of workers belonging to both the communities to total worker of the town was more than the share of population. It is interesting to note that the percentage of male workers to total male population has declined by 5.5 percent during 1971-91 where as the percentage of female workers during that period has increased by 17.4 percent. This shows that female participation in different activities has increased in 1991.

The growth of total workers (58.4 percent) during 1971-91 was lower than the growth of total population (62.9 percent) during the same period, which means that growth of total workers couldn't keep pace with growth of total population. During the same period growth of female workers (44.0 percent) was lower than growth of male workers (51.5 percent).

The wards have varied percentages of workers and during 1971 five wards had an average higher than the town's average where as in 1991, the number of wards with an average higher than the town's average increased to eight (Fig. 2.20). Out of 8 wards, the wards of VI and VII have a high concentration of business establishments whereas wards I, IV and XII have the maximum number of government offices.

The percentage of male workers to total male population is more than the town's average (37.5 percent) in eight wards of which three wards (V, VI and VII) have more than 42 percent. The percentage of female workers to total female population is low (10.13 percent) and five wards have more than the town's average. The wards in and around the Central Business District have less number of female workers. Among the S.C. and S.T. communities

the share of male and female workers to total male and female population of their respective communities are 40.9 percent and 12.2 percent respectively.

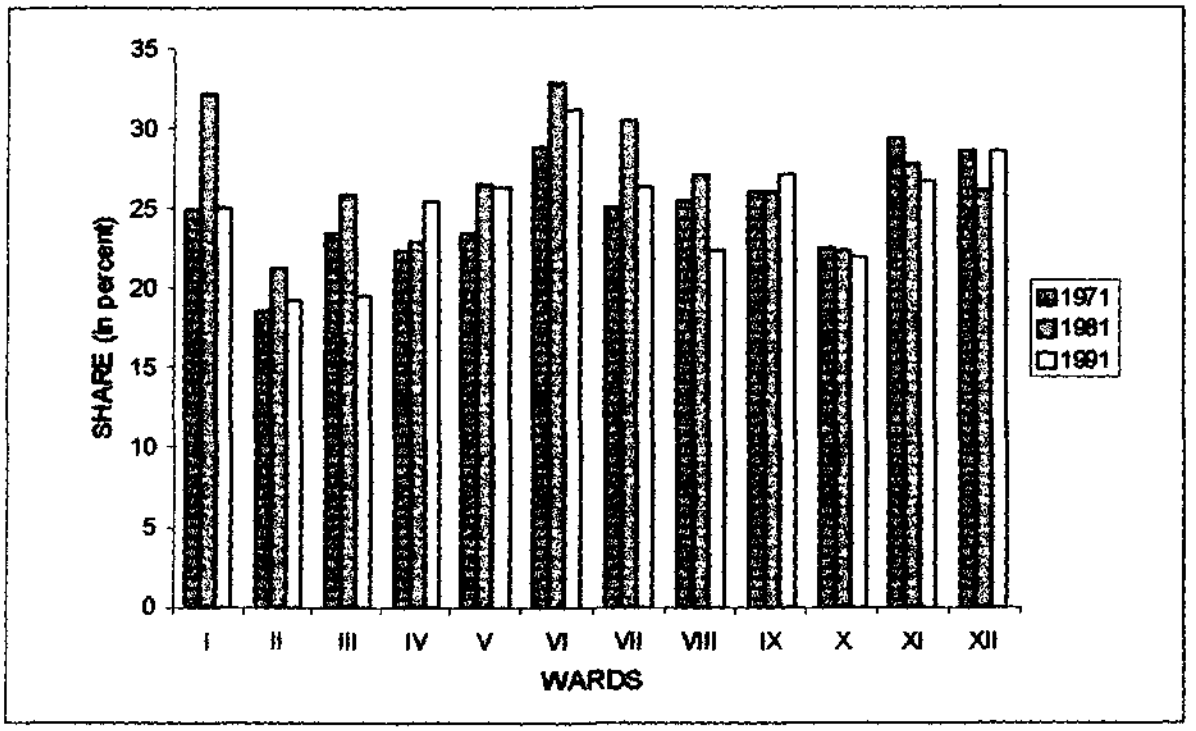


Fig. 2.20 : Total worker to total population.

The workers of different categories are grouped into three categories and percentage of workers is given in Table 2.12. Kurseong Municipality is surrounded by tea gardens and a part of its land is also under tea gardens and thus it is obvious that a percentage of its working

Table 2.12 : Percentage of workers to total population and their growth in different activities in Kurseong town.

Year	Workers (in percent)			Growth of workers (in percent)		
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary
1961	0.05	6.23	93.72	-	-	-
1971	5.77	8.75	85.48	11,800.00	46.75	-4.70
1981	0.44	3.63	95.93	-91.18	-52.35	29.07
1991	5.50	10.20	84.30	1,623.81	286.05	21.07

force both primary and secondary is related with tea plantations. The high percentage of workers in tertiary activities (84 percent) reveals the importance of Kurseong as a service town. Among the S.C. and S.T. communities the percentage of workers in tertiary activities (86.4 percent) is more than the town's average.

The growth of workers in different categories during different census years gives an incorrect picture due to the change in pattern of enumeration during different census years. As the figure for 1961 and 1981 are different from that of 1971 and 1991, a comparative study of workers during 1971-91 has been taken into consideration. Although the growth has remained positive for all the three categories during 1971-91, maximum growth is observed in secondary sector (84 percent). The share of workers in tertiary sector has declined during the said period. Occupational pattern in the wards show that only in two wards XI and XII, the share of both male and female workers in tertiary sector is less than the town's average. The share male workers in these two wards has decreased where as in the case of female workers the share has decreased in ward XII during the same period.

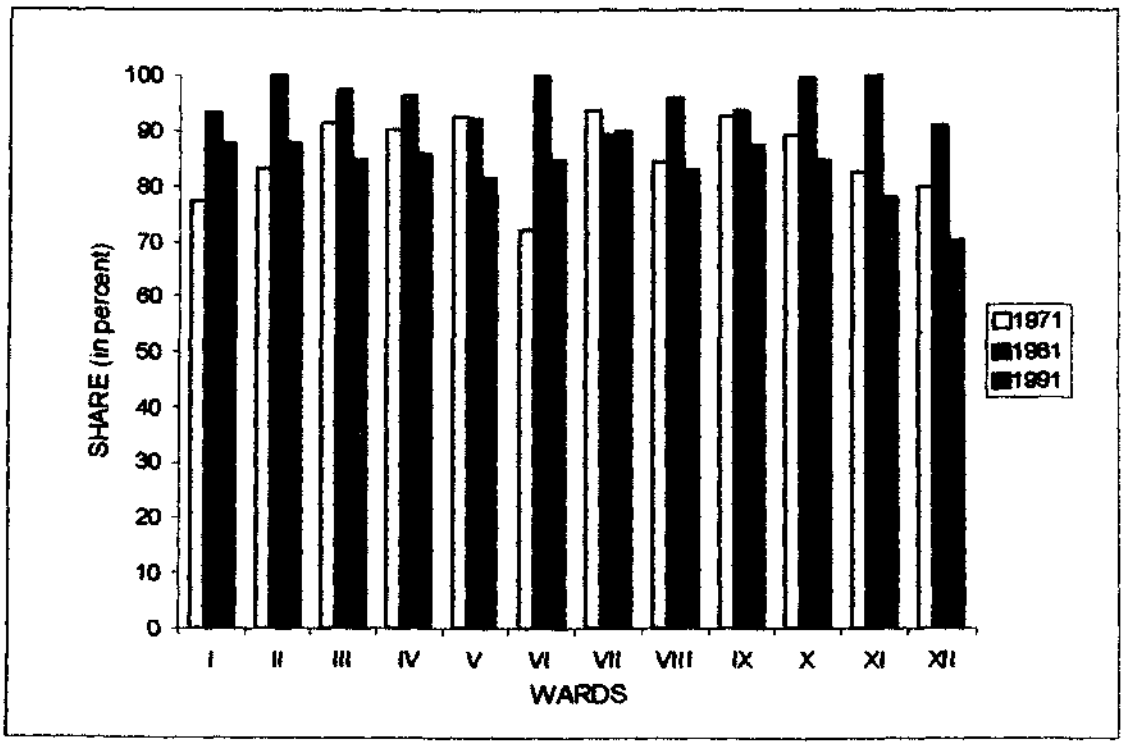


Fig. 2.21 : Male tertiary worker to male worker.

The share of male worker in tertiary activities to total male worker of the town has

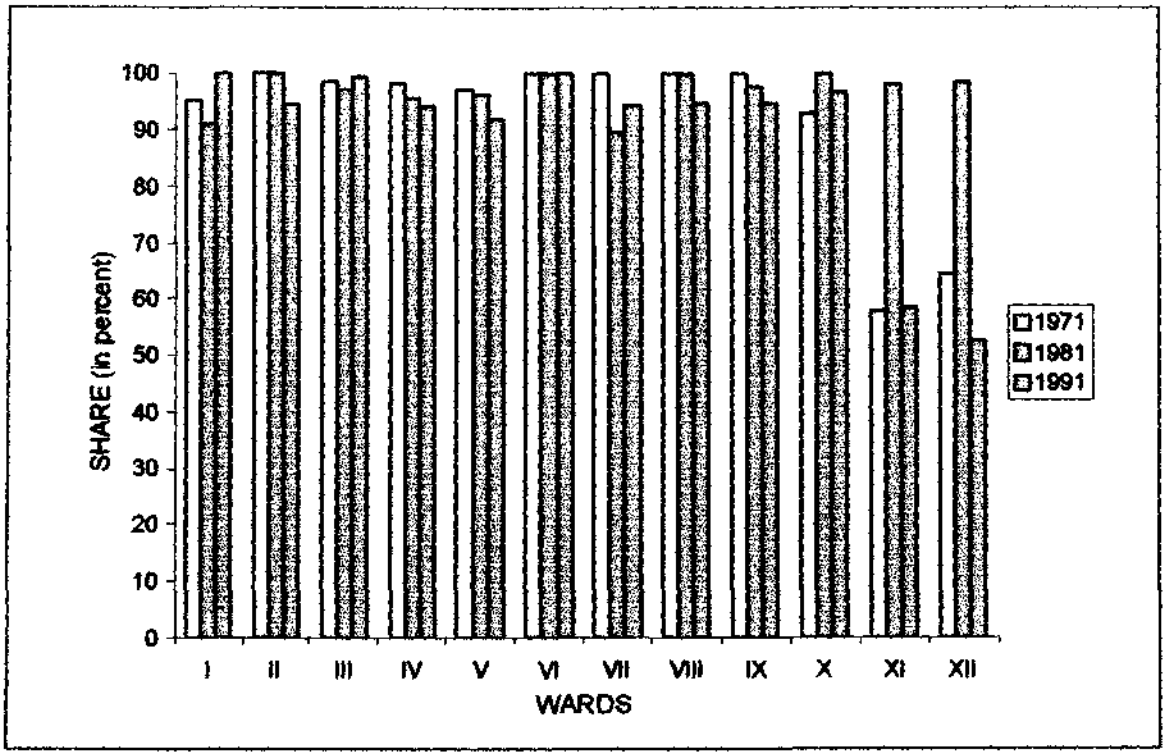


Fig. 2.22 : Female tertiary worker to female worker.

shown a decline during 1971-91 (Fig. 2.21). Only three wards have registered an increase in the share of male workers in tertiary activities. During the same period, the share of female worker in tertiary activities to total female worker has shown a marginal increase (Fig. 2.22).

The share of workers in trade and commerce during 1971-91 has remained the same (22 percent) where as in the case of workers in other services the share has increased (64.6 percent) and in the case of workers engaged in transport and communication and construction the share has decreased.

In 1971, the percentage of workers in other services was more in wards I, IV, XI and XII, trade and commerce was important in wards VI and VII and workers associated with transport and communication and construction were mostly concentrated in wards III and X. In 1991, this pattern has changed and it is revealed that workers in other services were more in wards I, II, III, IV, V, VIII, XI and XII. Trade and commerce as usual is important in wards VI and VII (Fig. 2.23 a and b). The percentage of workers in transport and construction decreased tremendously in 1991.

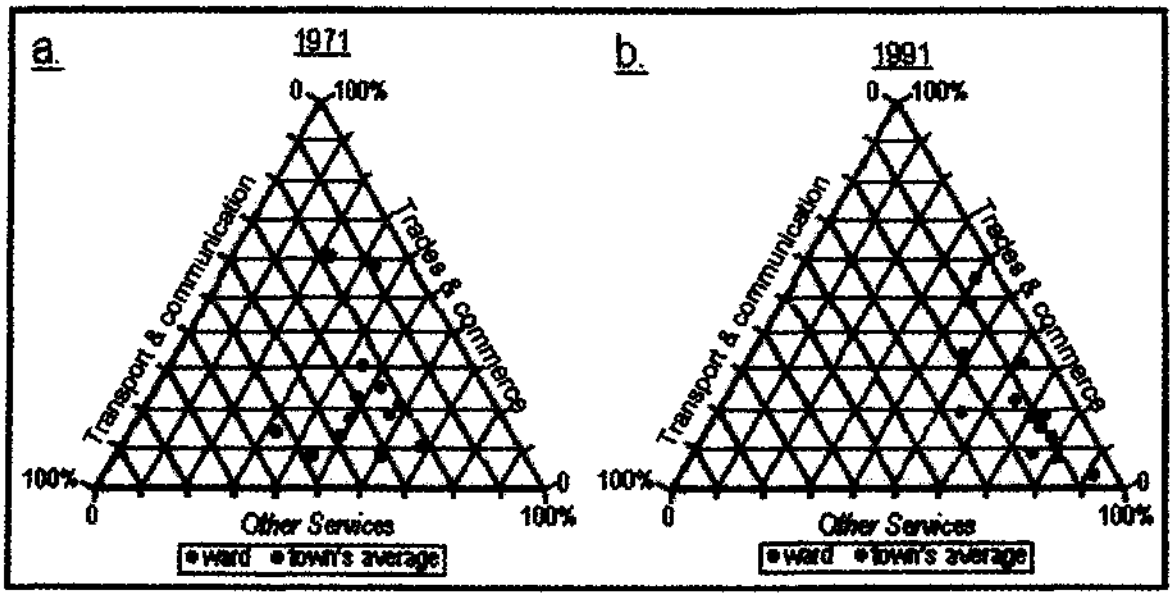


Fig. 2.23 : Different categories of workers in tertiary sector in (a) 1971 and (b) 1991.

There are about 450 porters working in Kurseong town. Most of these porters belong to the Chettri, Sherpa or Khati communities and have migrated mainly from eastern Nepal in search of work. It was not possible to get the exact period of migration of these porters because of the unwillingness on the part of the porters to divulge period of migration. About 75 percent of the porters reside permanently in the town and the rest are seasonal migrants. These seasonal migrants come to the town during the winter months and return back to Nepal during the paddy-growing season. Most of these porters along with their families reside at Sherpa Busty, Gandhigram, Subedar Busty, Dhobi Khola and Sudhapa Tol. The demand of porter's service is decreasing due to the availability of cheaper alternatives like vehicles, which carries goods at a cheaper rate than the porters do.

Other than these porters about 150 construction workers reside in Kurseong town. Earlier most of the construction workers used to come from the plains especially from the districts of Uttar and Dakshin Dinajpurs, Maldah, Jalpaiguri and Kochbehar in West Bengal and parts of Bihar. But due to an agitation carried on by the local trade unions for more participation of local workers, now about 50 percent of the construction workers working in the town are locals.

2.7.1 Relationship among different parameters of workers during – 1971-91.

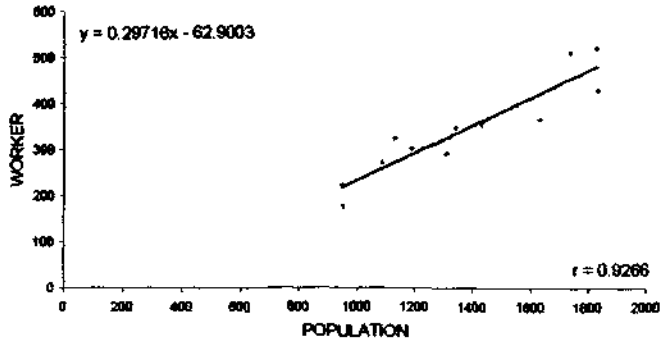
The coefficient of correlation among different parameters [total population (Tp), female population (Fp), total worker (Tw), male worker (Mw), female worker (Fw), male tertiary worker (Mt) and female tertiary worker (Ft)] that have been taken into consideration for analysing the status of occupational development in the town during different census years (1971, 1981 and 1991) are shown in Figures 2.25 (a-j), 2.26 (a-j) and 2.27 (a-j) respectively. In 1971, the relation between (c) female population (xFp) and female worker (yFpFw), (f) male worker (xMw) and female worker (yMwFw) and (j) female worker (xFw) and female worker in tertiary activities (YfwFt) were good (0.7084, 0.7593 and 0.8636 respectively) and

Table 2.13 : Relationship among different parameters of workers in different census years.

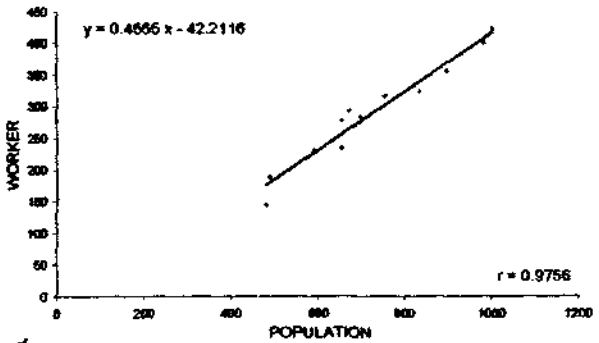
Year		y	r	Remark
1971	a.	yTpTw = 0.29716 xTp – 62.9003	0.9266	Very good
	b.	yMpMw = 0.4555 xMp – 42.2116	0.9756	Very good
	c.	yFpFw = 0.1221 xFp – 22.9892	0.7084	Good
	d.	yTwMw = 0.7707 xTw + 30.765	0.9848	Very good
	e.	yTwFw = 0.2293 xTw – 23.2648	0.8606	Very good
	f.	yMwFw = 0.2586 xMw – 18.9452	0.7593	Good
	g.	yMpMt = 0.3621 xMp – 16.8058	0.9610	Very good
	h.	yMwMt = 0.772 xMw + 23.2993	0.9569	Very good
	i.	yFpFt = 0.0778 xFp – 2.0781	0.7746	Good
	j.	yFwFt = 0.5034 xFw + 20.0217	0.8636	Very good
1981	a.	yTpTw = 0.2222 xTp + 61.8806	0.9359	Very good
	b.	yMpMw = 0.3779 xMp + 26.8912	0.9428	Very good
	c.	yFpFw = 0.0944 xFp + 4.6227	0.6111	Good
	d.	yTwMw = 0.7814 xTw + 14.077	0.9497	Very good
	e.	yTwFw = 0.2186 xTw – 14.0744	0.6468	Good
	f.	yMwFw = 0.1542 xMw + 22.5193	0.3755	Very good
	g.	yMpMt = 0.3648 xMp + 23.1354	0.9560	Very good
	h.	yMwMt = 0.9432 xMw + 4.3402	0.9907	Very good
	i.	yFpFt = 0.095 xFp + 2.1372	0.6295	Good
	j.	yFwFt = 0.9749 xFw – 0.2716	0.9983	Very good
1991	a.	yTpTw = 0.2002 xTp + 98.2906	0.909	Very good
	b.	yMpMw = 0.3055 xMp + 80.7092	0.9002	Very good
	c.	yFpFw = 0.1032 xFp – 2.0278	0.8658	Very good
	d.	yTwMw = 0.7693 xTw + 17.8101	0.9833	Very good
	e.	yTwFw = 0.2307 xTw – 17.81	0.8512	Very good
	f.	yMwFw = 0.2569 xMw – 4.3765	0.7415	Good
	g.	yMpMt = 0.2597 xMp + 62.0512	0.9031	Very good
	h.	yMwMt = 0.8292 xMw + 2.6102	0.9785	Very good
	i.	yFpFt = 0.1028 xFp – 15.0197	0.9152	Very good
	j.	yFwFt = 0.8323 xFw + 4.5868	0.9113	Very good

Fig. 2.25: Scatter diagrams showing relation between different parameters of workers – 1971.

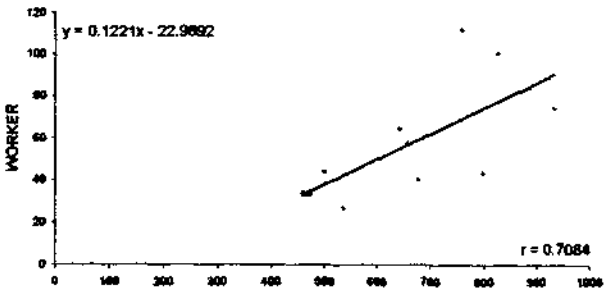
a. TOTAL WORKER TO TOTAL POPULATION



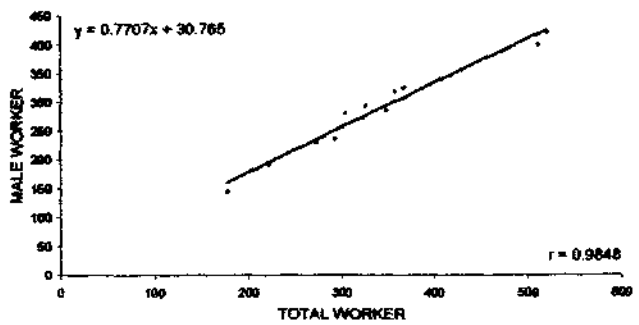
b. MALE POPULATION TO MALE WORKER



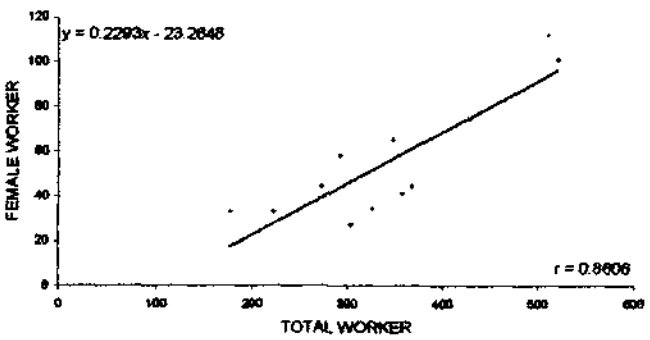
c. FEMALE POPULATION TO FEMALE WORKER



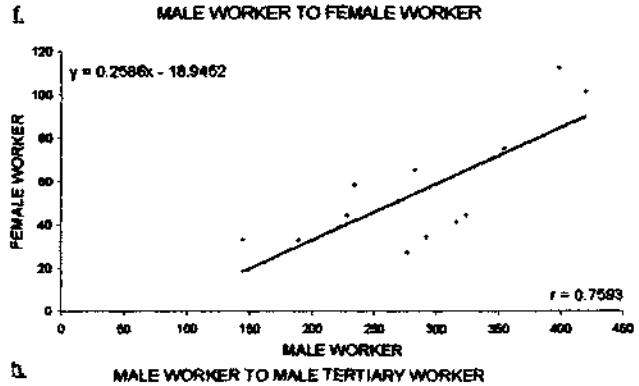
d. TOTAL WORKER TO MALE WORKER



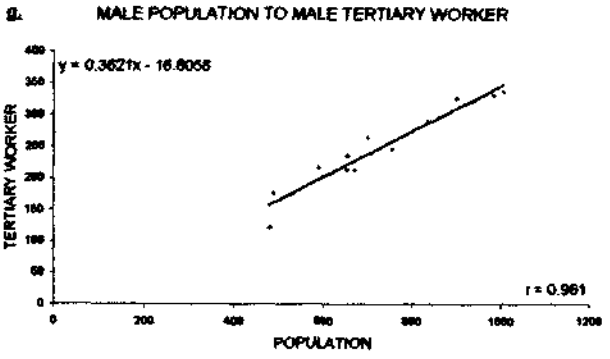
e. TOTAL WORKER TO FEMALE WORKER



f. MALE WORKER TO FEMALE WORKER



g. MALE POPULATION TO MALE TERTIARY WORKER



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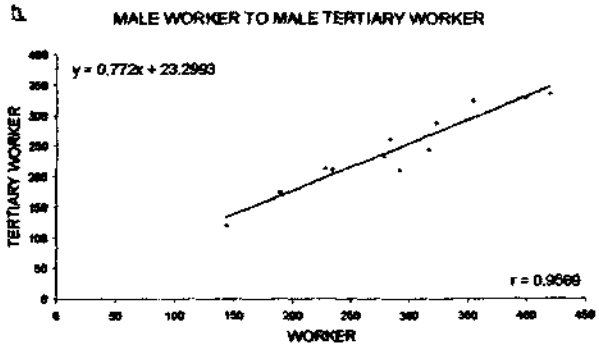
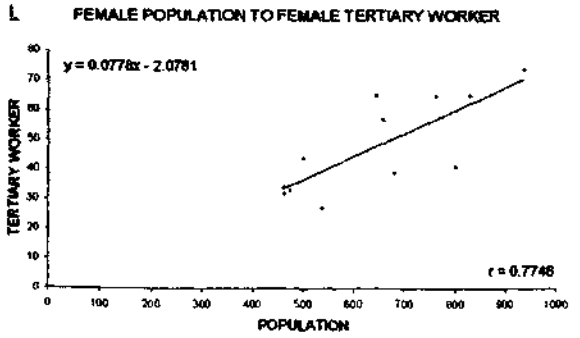


i. FEMALE POPULATION TO FEMALE TERTIARY WORKER



j. FEMALE WORKER TO FEMALE TERTIARY WORKER

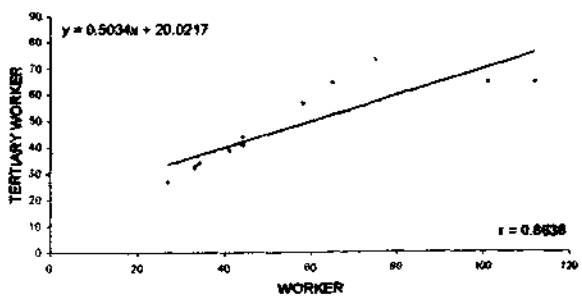
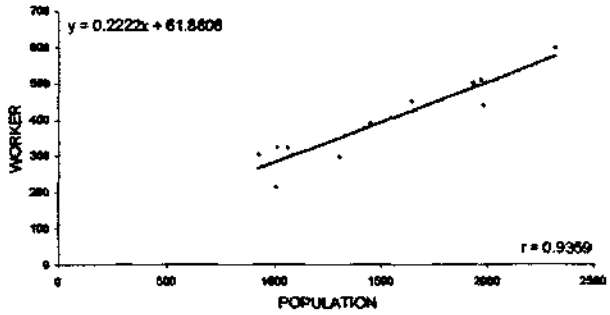


Fig. 2.26: Scatter diagrams showing relation between different parameters of workers – 1981.

a. TOTAL POPULATION TO TOTAL WORKER



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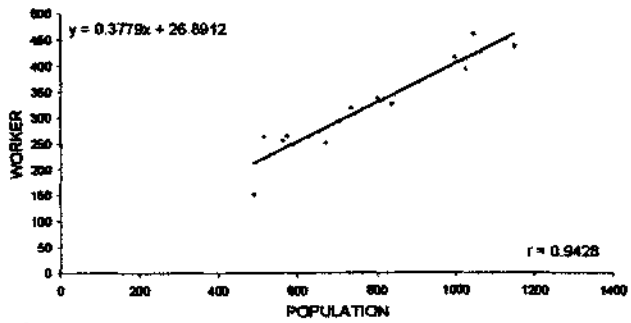
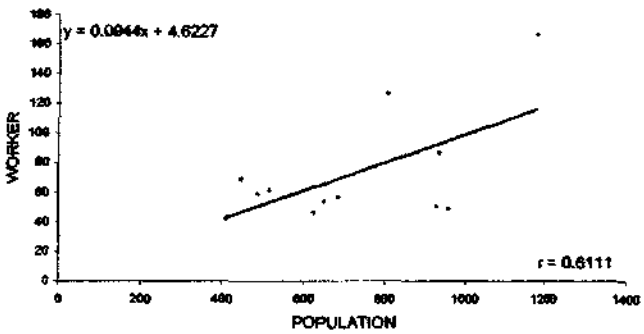
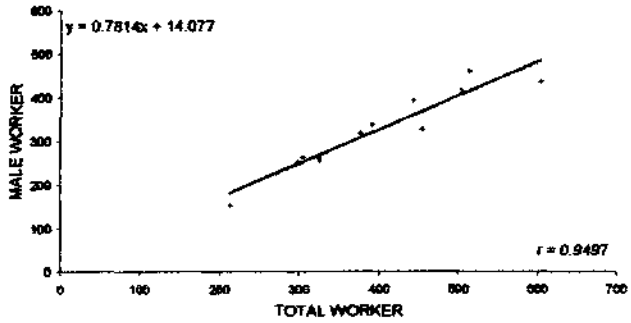


c. FEMALE POPULATION TO FEMALE WORKER



d. TOTAL WORKER TO MALE WORKER



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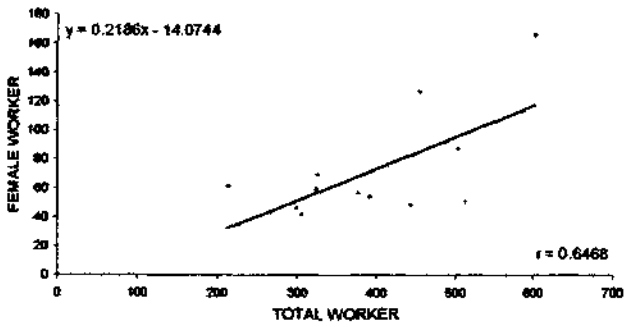
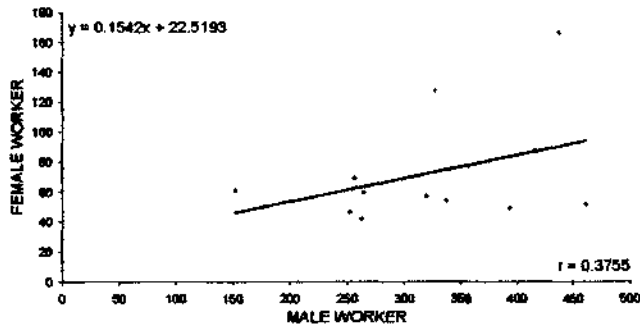
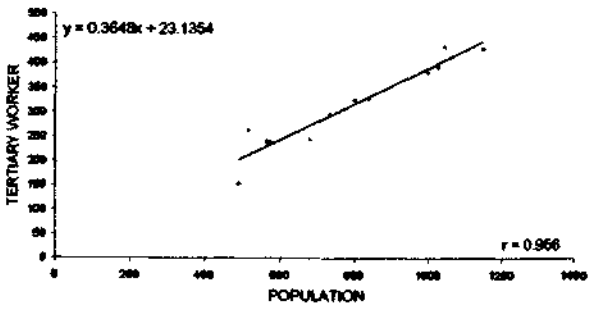


f. MALE WORKER TO FEMALE WORKER



g. MALE POPULATION TO MALE TERTIARY WORKER



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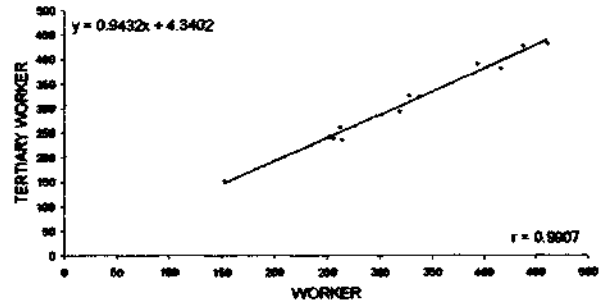
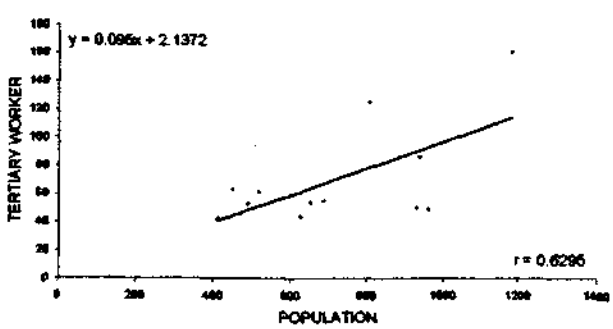


i. FEMALE POPULATION TO FEMALE TERTIARY WORKER



j. FEMALE WORKER TO FEMALE TERTIARY WORKER

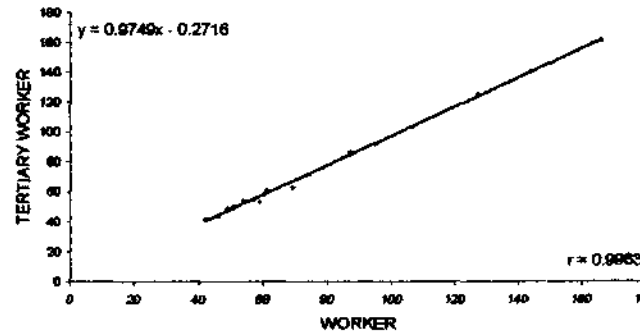
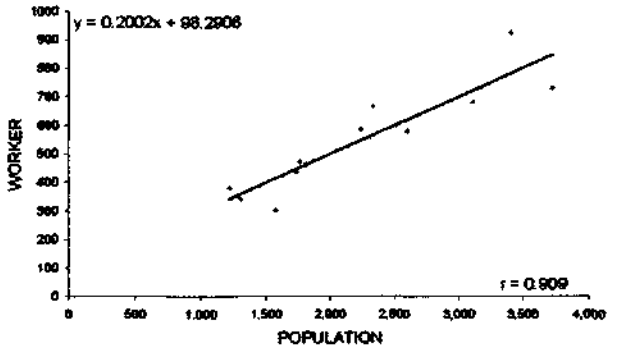
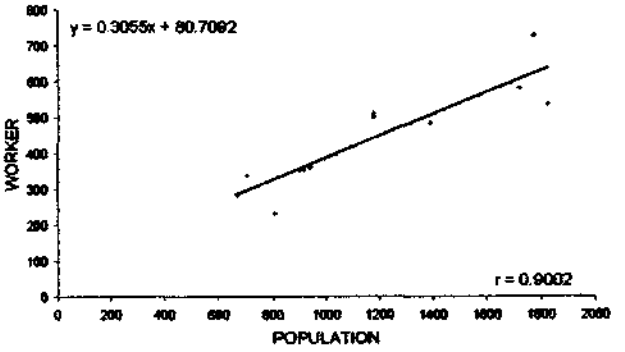


Fig. 2.27: Scatter diagrams showing relation between different parameters of workers – 1991.

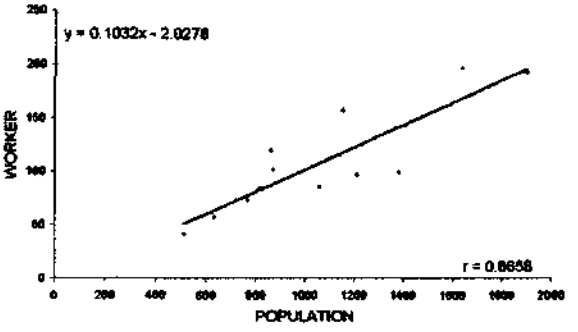
a. TOTAL POPULATION TO TOTAL WORKER



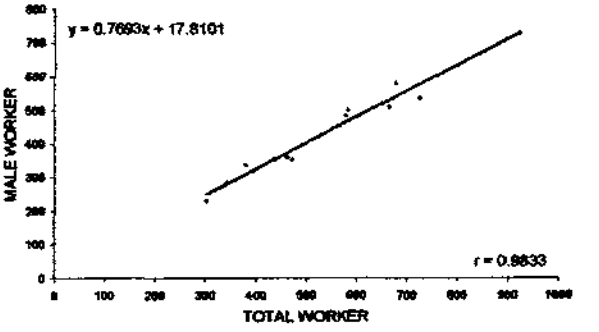
b. MALE POPULATION TO MALE WORKER



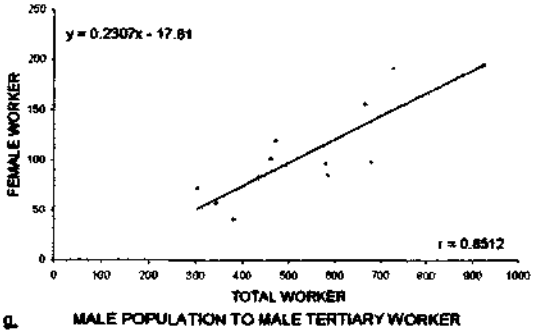
c. FEMALE POPULATION TO FEMALE WORKER



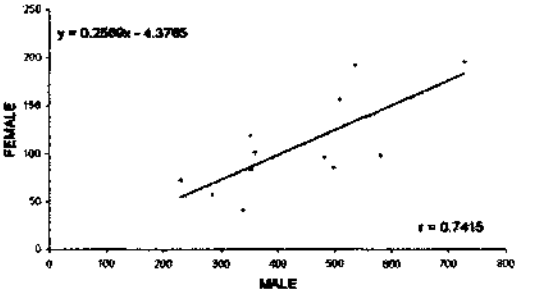
d. TOTAL WORKER TO MALE WORKER



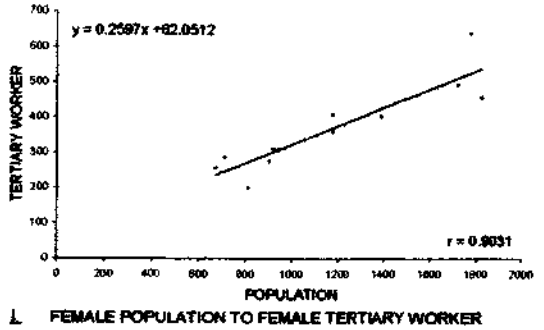
e. TOTAL WORKER TO FEMALE WORKER



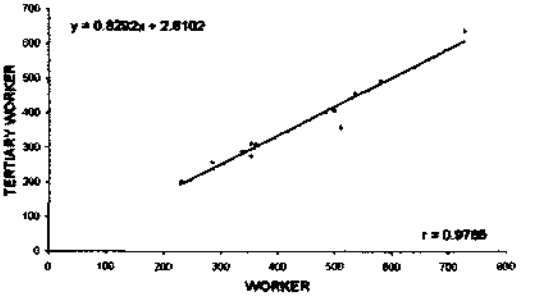
f. MALE WORKER TO FEMALE WORKER



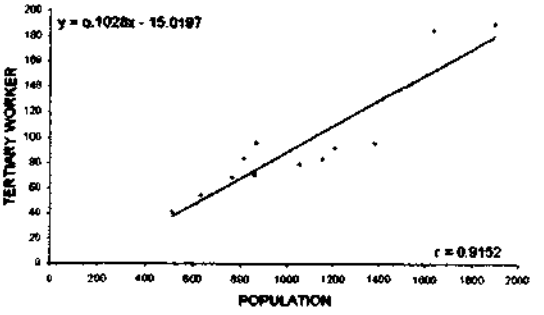
g. MALE POPULATION TO MALE TERTIARY WORKER



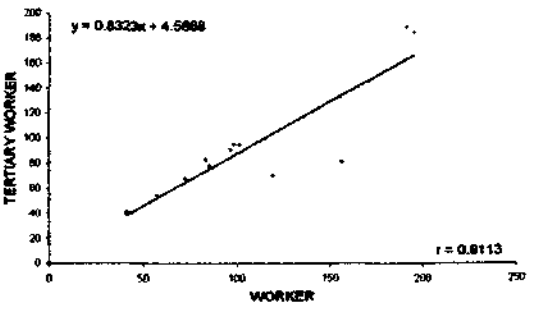
h. MALE WORKER TO MALE TERTIARY WORKER



i. FEMALE POPULATION TO FEMALE TERTIARY WORKER



j. FEMALE WORKER TO FEMALE TERTIARY WORKER



in the rest of the cases the relations were very good (Table 2.13).

In 1981, the relation between (f) male worker (xMw) and female worker (yMwFw) was very poor (0.3755), relation between (c) female population (xFp) and female worker (yFpFw), (e) total worker (xTw) and female worker (yTwFw) and (i) female population (xFp) and female worker in tertiary activities (yFpFt) were good (0.6111, 0.6468 and 0.6295 respectively) and in rest of the parameters (a, b, d, g, h and j) the relations were very good. The relationship among parameters in 1991 became better and except the relation between (f) male worker (xMw) and female worker (yMwFw) were good (0.7415) and in rest of the cases the relations between different parameters improved in1991 in comparison to 1971 and 1981.

CONCLUSION

Kurseong town accounts for about 7 percent of the total urban population of the district and about 16 percent of the total urban population of the hill area of the district. The different wards in the town have varied population and the coefficient of correlation between area and population in 1991 was poor. The population of Scheduled Castes and Scheduled Tribes in the town accounts for about 19 percent of the total population of the town and its growth during 1981-91 was less than the town's total population. Ward V has the maximum concentration of S.C. and S.T. population in the town. The sex ratio in the town has increased from 578 females per 1000 males in 1879 to 913 in 1991. The sex ratio is the least at the centre of the town and the highest in ward III. Five wards have experienced a negative growth during 1971-91.

The density of population in the town has experienced an increase of about 60 percent during 1971-91 and in 1991 the density of population was 5,299 persons per sq. km. Kurseong town has one centre of population and it coincides with the commercial centre of the town. Ward VII at the centre of the town has the highest density of population where as ward I has the lowest density of population. Most of the wards are either covered with forests or tea gardens and have low density of population. To have a uniform distribution of population in all the wards of the town about 33 percent of the population in 1991 required inter-ward movement.

The decadal growth of population in the town has remained positive but the index of growth has remained low and only during 1981-91, it has registered an increase of about 200 percent. Growth of population during 1971-91 was very high in wards V and IX and very low

in wards I, VI, VII and XI. By using methods of arithmetic progression, geometric progression and extra-polation, the future population of the town can be estimated as 33,965 for 2001 and 47,063 for 2011.

The percentage of literate in the town has been increasing since 1951 and in 1981 its percentage was the highest in West Bengal. The percentage of female literate is more among the S.T. than the S.C. population in the town. During 1971-81, the growth of literate was the maximum in ward V and during 1981-91, it was the highest in ward in VIII. Growth of male literate was maximum (272.41 percent) in ward IX where as growth of female literate was maximum (331.62 percent) in ward IX. The coefficient of correlation among different parameters of literate during 1971-91 was very good in most of the cases and good in few cases.

The share of worker to total population in the town, which is lower than the district's average, has declined in 1991 in comparison to 1971 and 1981. The percentage of female workers to female population has increased during 1971-91 where as the percentage of male workers to male population has decreased during the same period. The number of female workers is less in the wards in and around the CBD. 84 percent of the workers in the town are in the tertiary sector. In the tertiary sector, the percentage of workers in other services increased by about 65 percent during 1971-91 where as the percentage of workers in trade and commerce and transport and communication and construction has either remained same or declined. In 1991, workers in trade and commerce are more in wards VI and VII and in rest of the wards workers in other services are more. The coefficient of correlation among different parameters of workers in the town in 1971 was good or very good where as in 1991 most of the relations were very good.

The growth of population and its spatial distribution in the town will help in understanding the pattern of land use, their distribution in different wards and the changes that have taken place with the change in population in the town. It will also reveal the variation in the land use pattern from the centre of the town.

CHAPTER III

LAND USE AND THEIR DISTRIBUTION

INTRODUCTION

The concept of *land use* is often considered a relatively stable subject, related mainly to the use to which the land in certain region at a certain time is put (Viale, 1975). There are several general definitions of land use, the earliest of which was given in connection with the first land utilisation survey of Britain from 1931 onwards. It stated quite simply that the object of survey was to discover 'for what purpose the surface of the country is used' (Stamp, 1948). According to Vink, 'the use of land is the result of a continuous field of tension created between available resources and human needs and acts by human efforts'. Thus, by land use it is implied that it is mankind's adaptation of land surface and man's need of different magnitudes for space for different uses (Northam, 1979).

The pattern of land utilisation is of foremost importance in urban activities and it becomes crucial to define and develop a systematic and comprehensive land policy. The urban land policy should aim at providing guidance in the use and reuse, in curbing the misuse, in preventing abuse, and in regulating the non-use of land in the better interest of people (Abrams, 1964). But before starting actual planning, a proper study of the existing land use is imperative.

There is no uniformity in the classification of urban land uses in different parts of the world. This is primarily due to the differences in the land use in different cities and it is also attributable to the difficulties in mapping various uses. The types of land use in the Indian cities and those in the western cities are not spatially distributed in the same manner. The highly mixed land use in Indian urban areas differs markedly from the usual segregation of land use in Anglo-American cities (Breese, 1969).

One earliest classification was by Bartholomew (1955) in the U.S.A. He distinguished two categories of urban areas: developed and undeveloped and then divided the developed areas into (a) privately developed, such as residential, commercial and industrial, and (b) publicly developed, such as streets and transport property, parks and playgrounds and public

and semi-public property. Chapin (1957) categorised urban land use into residential, retail business, transport and communication, industries, wholesale and storage, public buildings, open spaces, and vacant or non-urban use. The major land use categories in Britain today are residential, open spaces, public buildings and institutions, industrial, commercial, statutory undertakers, vacant and derelict buildings (Collins, 1965). Later, American Institute of Planners focussed on land use characteristics alone as basis for classification. In this classification main divisions were 'functional characteristics' and 'other characteristics'.

In India, the recognised land use categories are of two types – the town planners use one category and the urban geographers use the other category. The town planners categorise urban land use into residential, commercial, industrial, transport and communication, public utilities, public and semi-public uses, open space, agricultural, vacant land and water bodies (Gowda, 1972). The urban geographers categorise urban land use into residential areas, agricultural areas, open spaces, military lands, parks and playgrounds, commercial, administrative, educational, industrial and burial grounds (Singh, 1964). The best use of each parcel of land requires a scientific and methodically appreciable classification of the present land use, which may help in investigating the best use of land after considering the major land use categories (Mondal, 1982).

3.1 LAND USE CLASSIFICATION

Based on land use classification by town planners, the following land use categories for the present study are discussed.

3.1.1 Urban Use

(a) Residential

Residential land use plays a significant role in shaping the urban morphology. There is an inverse relationship between the size of a town and the space occupied by residences, that is to say, smaller the towns larger the area under this use (Attaullah, 1985). Location of a residential area in an urban centre is controlled by a variety of factors, such as the nature of land, growth and distribution of non-residential lands, time-distance from the place of work, urban amenities etc. It is also controlled to a certain extent by factors like – land value, choice

of urban planners and political decisions. All these factors account for a significant change in the pattern of residential land use with the growth of town.

(b) *Commercial*

Trades and commerce play an important role in the development of urban life and activity. Since a town is an agglomeration of people, development of commerce is necessary to meet the demand of the local and surrounding rural population. The demand for land for commercial activity is related to business profits anticipated from its use. The competition for the most advantageous sites places a higher market value on commercial land that can be commanded by most other uses of urban land (Bartholomew, 1955). Once the commercial centre is established, it starts affecting the residential growth. In order to minimise travel, people like to reside close to the commercial centre. The central business district becomes the hub of all activities and the vehicles begin to originate from there. The business centres thus play an important role in controlling the urban growth and in turn they themselves are affected and modified by it (Singh, 1980). Kurseong is a hill town and its commercial structure is different in many respects from the towns of the plains.

(c) *Industrial*

The light industrial area of central cities has in the past centred on the main business district of the city. This area sometime surrounds the business core, but most often is on one side or another of the major commercial concentration. While some light industries have been located in peripheral area to gain larger sites, there are still strong ties between certain light manufacturing processes and the central area (Bartholomew, 1955). Kurseong doesn't have any important industrial establishment.

(d) *Transport and communication*

Transport has an important influence on land use economics, and the amount of land given over to railroad property varies from community to community according to each city's economic functions and its position in transportation network (Bartholomew, 1955). The amount of space devoted to streets varies according to the individual towns.

(e) Public utility

The land under public utility services performs important activity in the city life. Adequate water supply, sewerage, drainage and power are the essentials of urban life. The utility services and public facilities are responsible for the urban growth to a considerable extent. Further, these services also create avenues for social and cultural development of a city. The distribution of cultural and religious institutions gives a broad view of the type of people living at any place.

(f) *Public and semi-public*

These uses are either scattered or isolated but are important in the social life of a town. In an urban centre, institutional land use is expected to increase at a faster rate than the administrative use as the former is directly related to the population and thus has a greater potentiality to expand. Educational and medical institutions are bound to develop with an increase in population (Ataullah, 1985). Educational institutions perform one of the major functions in a city by providing socio-cultural activities to the urban way of life.

(g) Open space

Open space is inversely related to the size of a town. This is to say the larger the town the smaller is the open space. This is because urban development takes place at the expense of non-urban uses. Thus, open space has been decreasing in all the towns. Open space planning is not what to do with leftover or provide space for recreation only. Rather, it is how to make the most of the open space character of areas within the built-up areas.

Open spaces should (i) give structure, shape and form to the separating clusters, preserving wedges, and giving identity to the urban communities and yet unite them through parks and playgrounds, (ii) draw a 'limit of development line' both within the city and around the city to prevent sporadic sprawl, and (iii) open spaces are needed not only to provide recreation and to preserve scenic and historic sites but also to protect watersheds of even minor streams and provide natural drainage (Prakasarao, 1983).

3.1.2 Non-urban use

(a) Agriculture

In Kurseong agriculture land use is not associated with the growing of cereals but with a plantation crop that is tea. During the formation of the municipality areas under tea gardens were incorporated within its limits.

(b) Forest

A part of Dhobijhora Reserved Forest lying in the north-eastern part of the town was made a part of municipality during its formation.

3.2 LAND USE PATTERN IN 1977

Of the total area of Kurseong town (504.97 ha) only 29 percent was developed in 1977 (Table3.1). Green belt comprising tea gardens and reserved forest accounted for about 56 percent of the total land of the town. The Government and private users own vacant lands, which accounted for about 24 percent of the land. The spatial distribution of different functions of land use in the town is shown in Fig. 3.1.

Table 3.6 : Areas and percentages of land use in Kurseong, 1977.

Urban use				Non-urban use			
Land use type	Area (in ha)	% to urban area	% to total area	Land use type	Area (in ha)	% to non-urban area	% to total area
Residential	75.887	51.29	15.03	Agriculture	168.97	47.33	33.46
Commercial	5.905	3.99	1.17	Forest	64.992	18.2	12.87
Industrial	0.969	0.65	0.19	Vacant	123.054	34.47	24.37
Transport & communication	30.26	20.45	5.99				
Public utilities	5.11	3.45	1.01				
Public & semi public	21.295	14.39	4.22				
Open space	8.528	5.76	1.69				
Total	147.954	100.00	29.3	Total	357.016	100.00	70.7

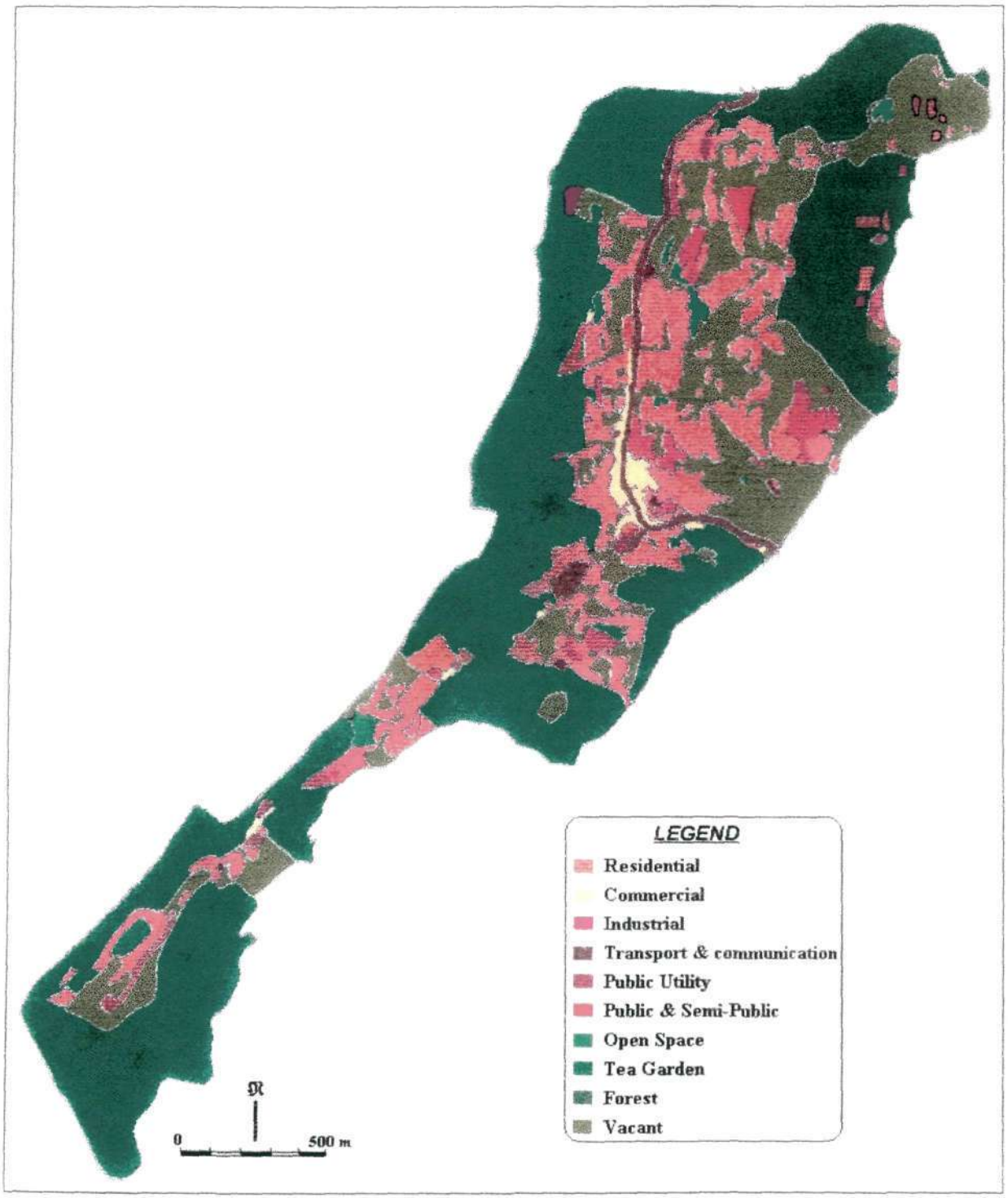


Fig. 3.1: Land use pattern in Kurseong town in 1977.

Table 3.2 reveals that four wards had a very low percentage of land under urban use and this was due to the presence of tea gardens and reserved forest. Ward I had the lowest percentage of urban land (19.12) of all the wards in the town. The four wards with low percentage also hade a large part of their land either under reserved forest, tea gardens or vacant land belonging to the private owners. The three wards with high percentage of land under urban use were located at the centre of the town and ward VII had the highest percentage (94.7). The distribution of different land use functions in the twelve wards of the town is shown in Fig. 3.2. It reveals that in the bigger wards, the percentage of land under residential and commercial uses were less in comparison to the smaller wards lying near the centre of the town.

Table3.2: Percentage of land under urban use to total land in different wards of Kurseong town.

Percentage of land under urban use	Category	Wards	No of wards	Percent (wards)
Below 25	Very low	I, IX, XI, XII	4	33.33
25-50	Low	II, V, VIII, X	4	33.33
50-75	Moderate	III,	1	8.33
Above 75	High	IV, VI, VII	3	25.00
Total			12	100.00

(a) Residential

About 51 percent of the land under urban use was devoted to residential use or it covered about 15 percent of the total land of the town. The land under residential use to land under urban use played a dominant role in the town. Share of land under residential use in different wards are grouped and categorised in Table 3.3. The grouping reveals that in three wards percentages of land under residential use were low and lowest percentage was recorded in ward VI (18.3). Wards VI and VII are located at the centre of the town and are dominated by business activities. Table 3.3 also reveals that four wards had high percentages of land under residential use. Land under residential use played a dominant role in all the wards except in wards VI and VII.

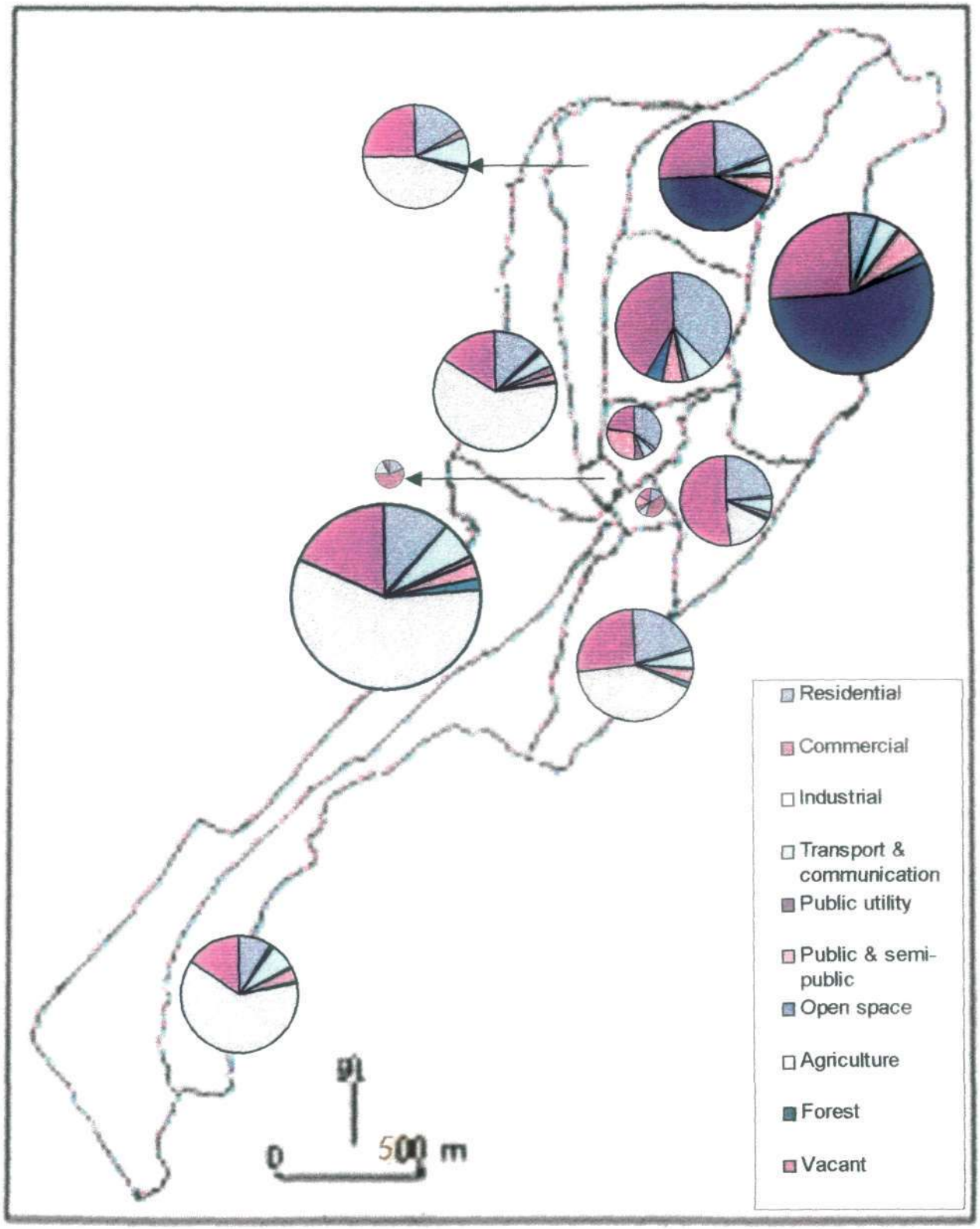


Fig. 3.2: Percentage of land under different land uses functions in Kurseong town in 1977.

Table3.3 : Land under residential use in different wards of Kurseong town.

Percentage of land under residential use	Category	No. of Wards	Percentage of wards
Below 20	Very low	1	8.33
20-40	Low	2	16.67
40-60	Moderate	5	41.67
Above 60	High	4	33.33
Total		12	100.00

(b) *Commercial*

About 4 percent of land under urban use was under commercial use. Only in two wards i.e. VI and VII it played a dominant role and most of the business activities either wholesale or retail, were conducted here. In wards VI, VII and VIII commercial land use was the most distinctive function. There was no land under commercial use in wards I and II.

(c) Industrial

Industries were insignificant in this town. Factories for processing of tea were found in wards IX and XII. The factory in ward II was known as the Cutlery Servicing Station related with manufacture of tools and other items needed for the tea industry. Railway press was located in ward IX.

(d) Transport and Communication

These uses were the second most important functions in Kurseong town and covered about 20 percent of land under urban use. They included land under roads, railways and radio station of A.I.R. The radio station was located in ward XII. Share of land under transport and communication use to land under urban use in different wards is categorised in Table3.4.

Among the wards, Ward IV had low percentage (8.3) of land under transport and communication and ward XI had the highest percentage (33.23) and this was due to the fact that a large part of land was under roads and railways. The railway station was also located in this ward.

Table 3.4 : Land under transport and communication use in different wards of Kurseong town.

Percentage of land under transport and communication	Category	No. of Wards	Percentage of wards
Below 10	Very low	1	8.33
10-20	Low	7	58.34
20-30	Moderate	3	25.0
Above 30	High	1	8.33
Total		12	100.00

(e) Public Utilities

Land under this use was minimum in ward VII and maximum in ward IX. It included land under religious places, cultural centres, Public Health Engineering and public and community latrines.

(f) Public and semi-public

Land under this use had the third highest percentage (14.3) of land under urban use in the town. Table 3.5 shows the number of wards in different categories. The Ward V had the lowest percentage (1.8) and the ward IX had the highest percentage of land under this use. These two wards (I and IV) in the high category had a number of Government offices, educational institutions and hospital. The Ward I had residential educational institutions, office of the forest department and TB Sanatorium where as ward IV had the offices of the

Table 3.5 : Land under Public and Semi-public use in different wards of Kurseong town.

Percentage of land under Public & Semi- Public	Category	No. of Wards	Percentage of wards
Below 10	Very low	5	41.67
10-20	Low	5	41.67
20-30	Moderate	-	0.0
Above 30	High	2	16.66
Total		12	100.00

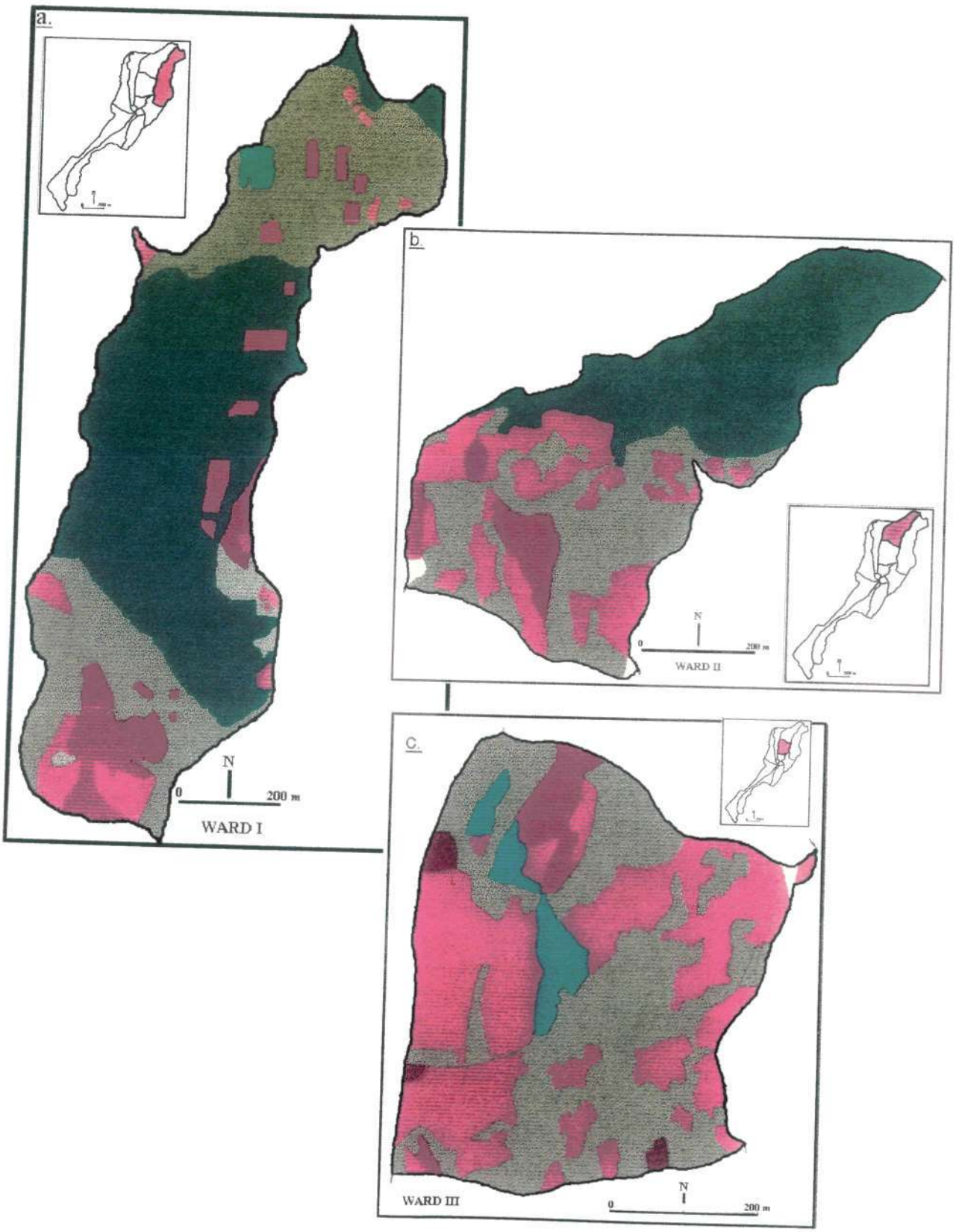


Fig. 3.3 : Land use pattern in 1977 in wards (a) I, (b) II and (c) III.

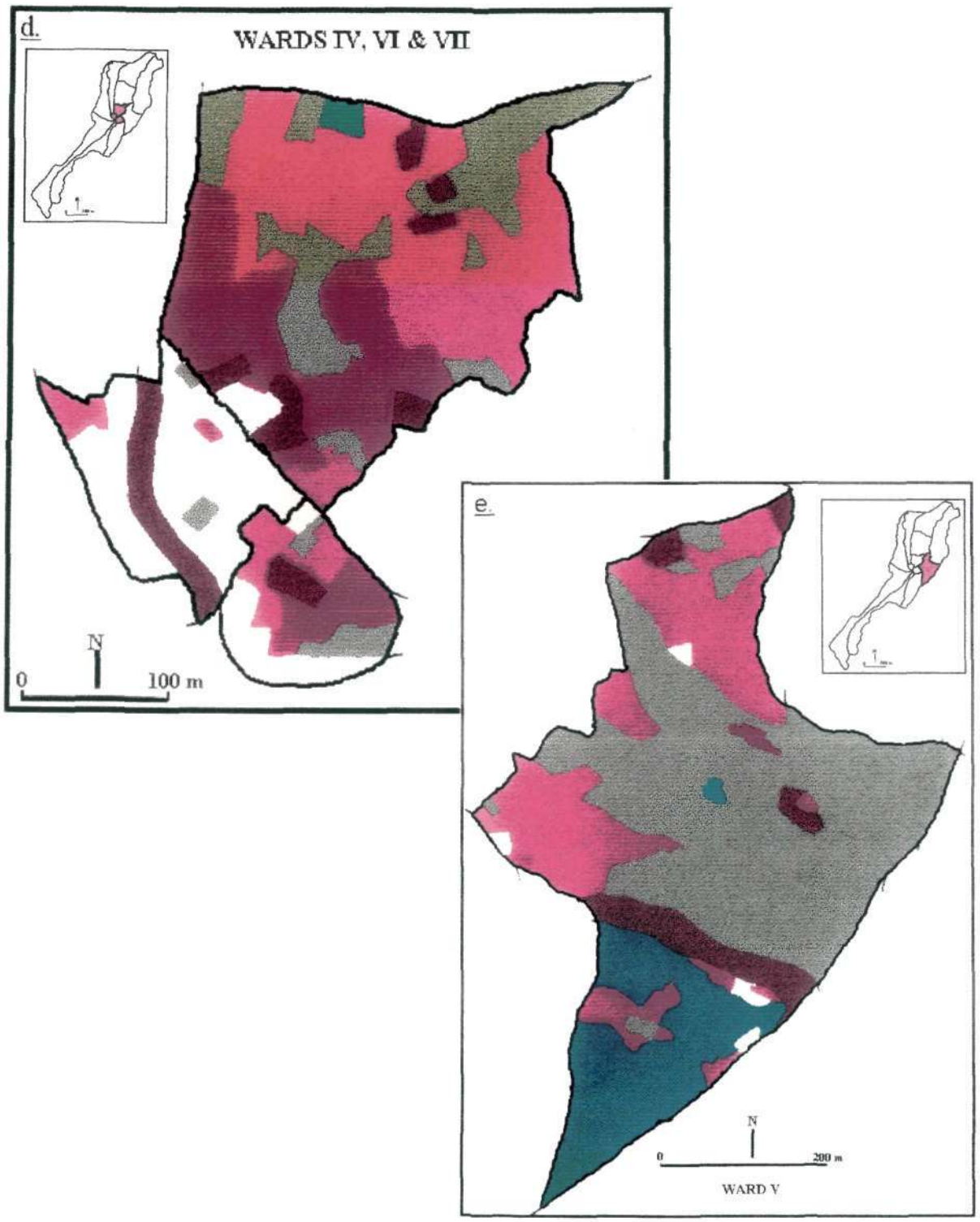


Fig. 3.3 : Land use pattern in 1977 in wards (d) IV, VI and VII and (e) V.

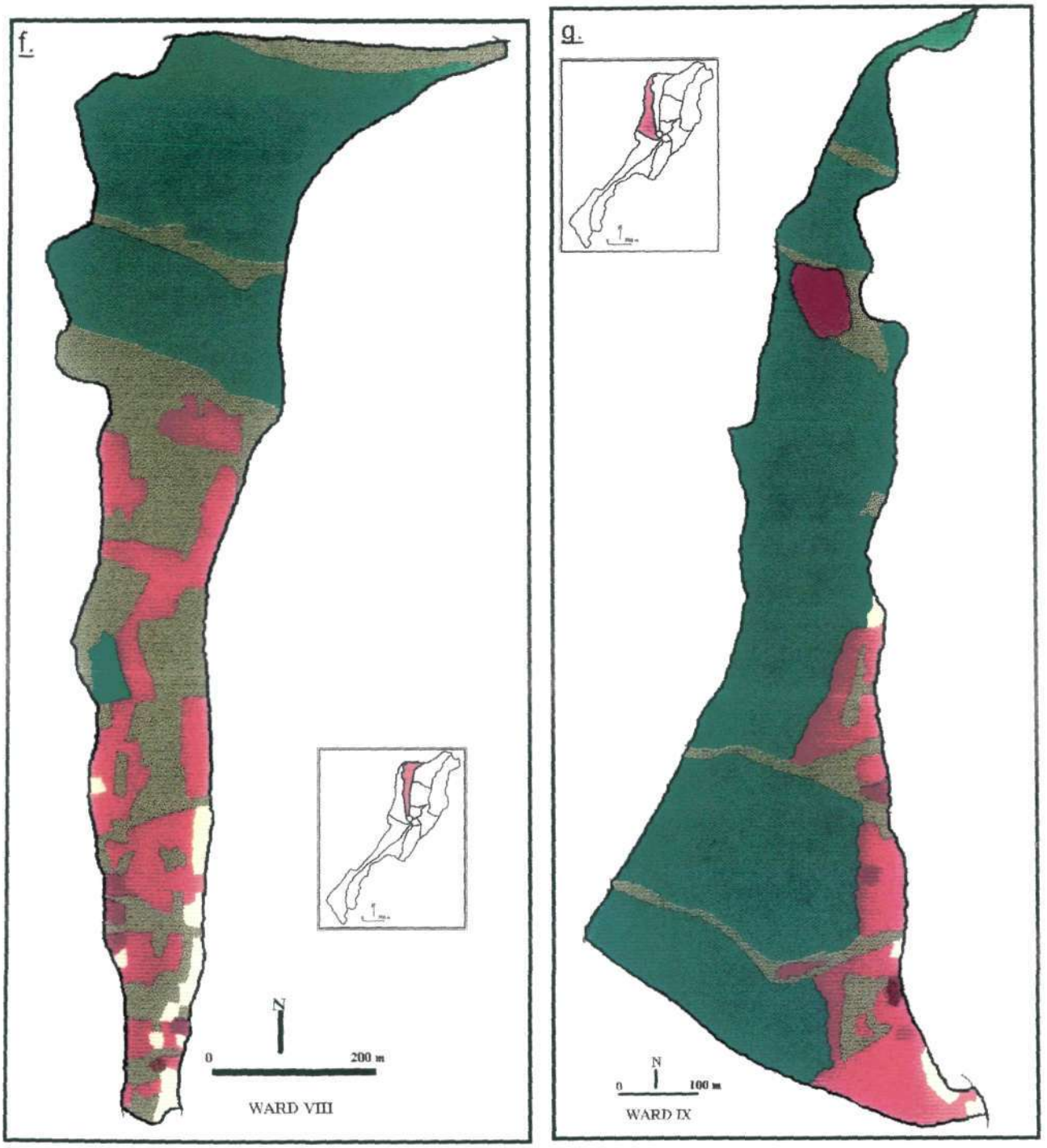


Fig. 3.3 : Land use pattern in 1977 in wards (f) VIII and (g) IX.

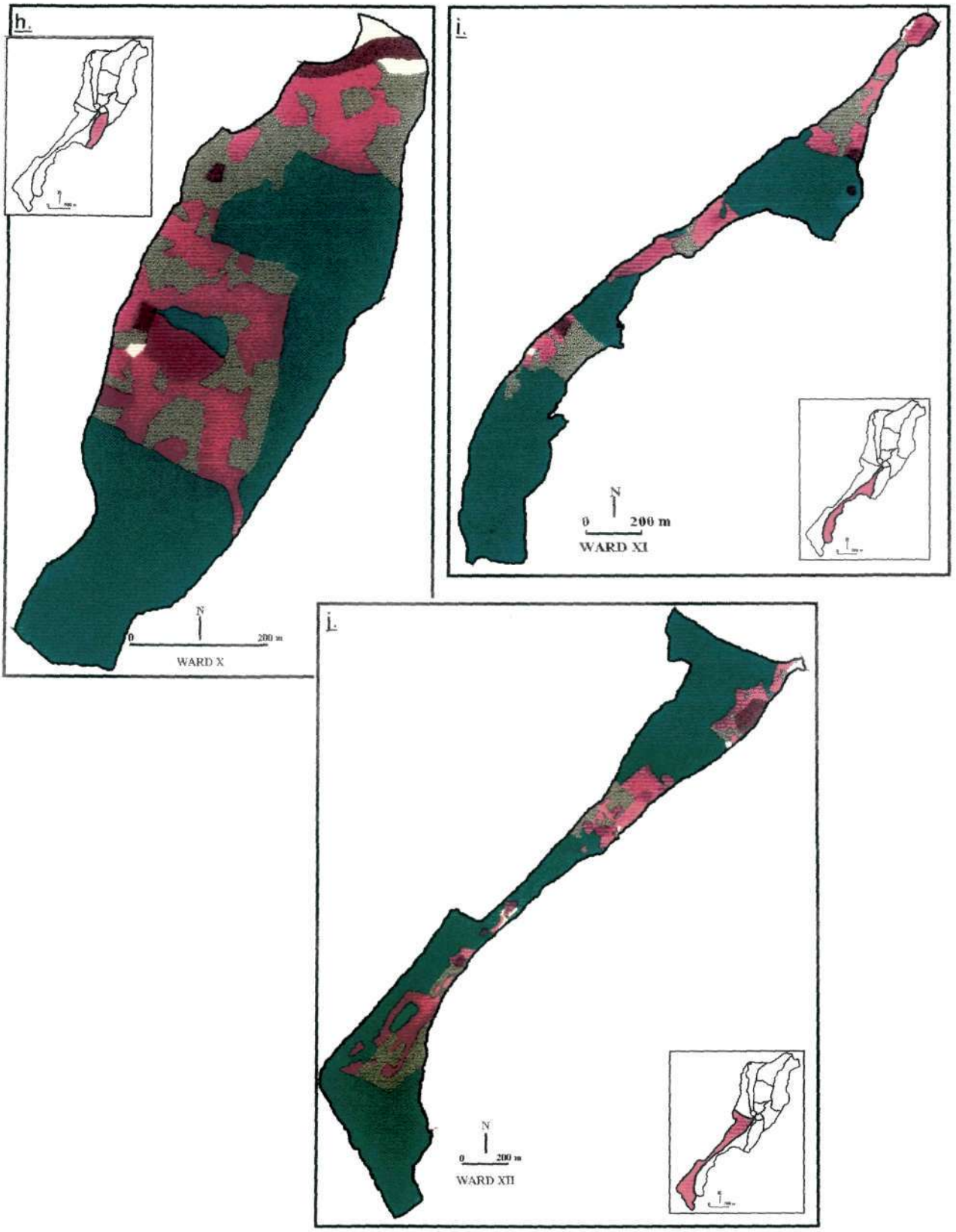


Fig. 3.3 : Land use pattern in 1977 in wards (h) X, (I) XI and (j) XII.

Public Works Department and the Municipality, Sub-Divisional Hospital and a few educational institutions.

(g)Open Space

This use comprised land under playgrounds and in two wards (VI and VII) land under this use was not found. Big playgrounds were found in wards I, III and XII.

3.2.2 Non- Urban Use

(a) Agriculture

In three wards (IX, XI and XII), more than 50 percent of the total land and in two wards (VII and X) more than 40 percent of the total land were under tea gardens.

(b) Forest

Wards I and II were covered by forest and about 54 percent of the land in ward I and about 42 percent in ward II were under forest.

The spatial distribution of different functions of land use for the different wards of the town is shown in details in Fig. 3.3 (a-j).

3.3 LAND USE PATTERN IN 1999.

Of the total area about 47 percent of the land was under urban use in 1999 (Table 3.6). Land under non-urban land use is still high due to the presence of tea gardens, reserved forest and vacant land under its jurisdiction. The spatial distribution of different functions of land use in the town is shown in Fig. 3.4. The number of wards in different categories of land under urban use is shown in Table 3.7.

The table reveals that only one ward has a very low percentage of land under urban land use due to the fact that a large part of the land is covered by reserved forest. Three wards have low percentage of land and this is due to the fact that these wards cover tea gardens. Four wards have high percentage of land under urban use. Out of these four wards two (VI and VII) have the maximum area under commercial use and can aptly be called the Central Business

District (CBD) of the town. The distribution of different land use functions in the twelve wards of the town is shown in Fig. 3.5.

Table 3.6 : Areas and percentages of land use in Kurseong, 1999.

Urban use				Non-urban use			
Land use type	Area (in ha)	% to urban area	% to total area	Land use type	Area (in ha)	% to non-urban area	% to total area
Residential	147.65	62.48	29.24	Agriculture	147.274	54.82	29.16
Commercial	11.427	4.83	2.26	Forest	64.631	24.06	12.8
Industrial	0.682	0.29	0.14	Vacant	56.741	21.12	11.24
Transport & communication	30.486	12.9	6.04				
Public utility	7.591	3.21	1.5				
Public & semi public	28.003	11.85	5.54				
Open space	10.485	4.44	2.08				
Total	236.324	100.00	46.8	Total	268.646	100.00	53.2

Table 3.7 : Percentage of land under urban use in different wards of Kurseong town, 1999.

Percentage of land use under urban use	Category	Wards	No. of Wards	Percent (Wards)
Below 25	Very low	I	1	8.34
25-50	Low	IX, XI, XII	3	25.00
50-75	Moderate	II, V, VIII, X	4	33.33
Above 75	High	II, IV, VI, VII	4	33.33
Total			12	100.00

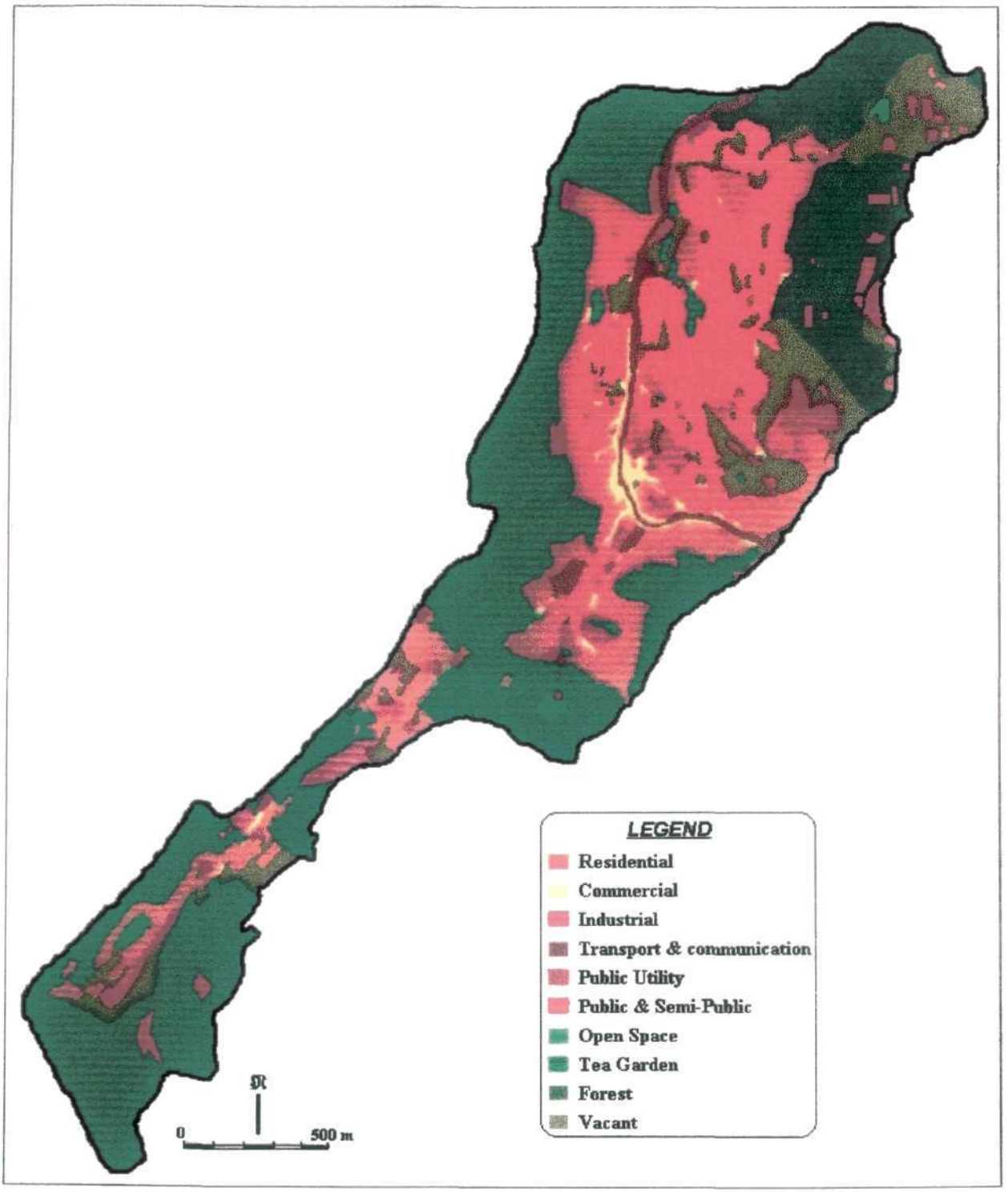


Fig. 3.4 : Land use pattern in Kurseong town during 1999.

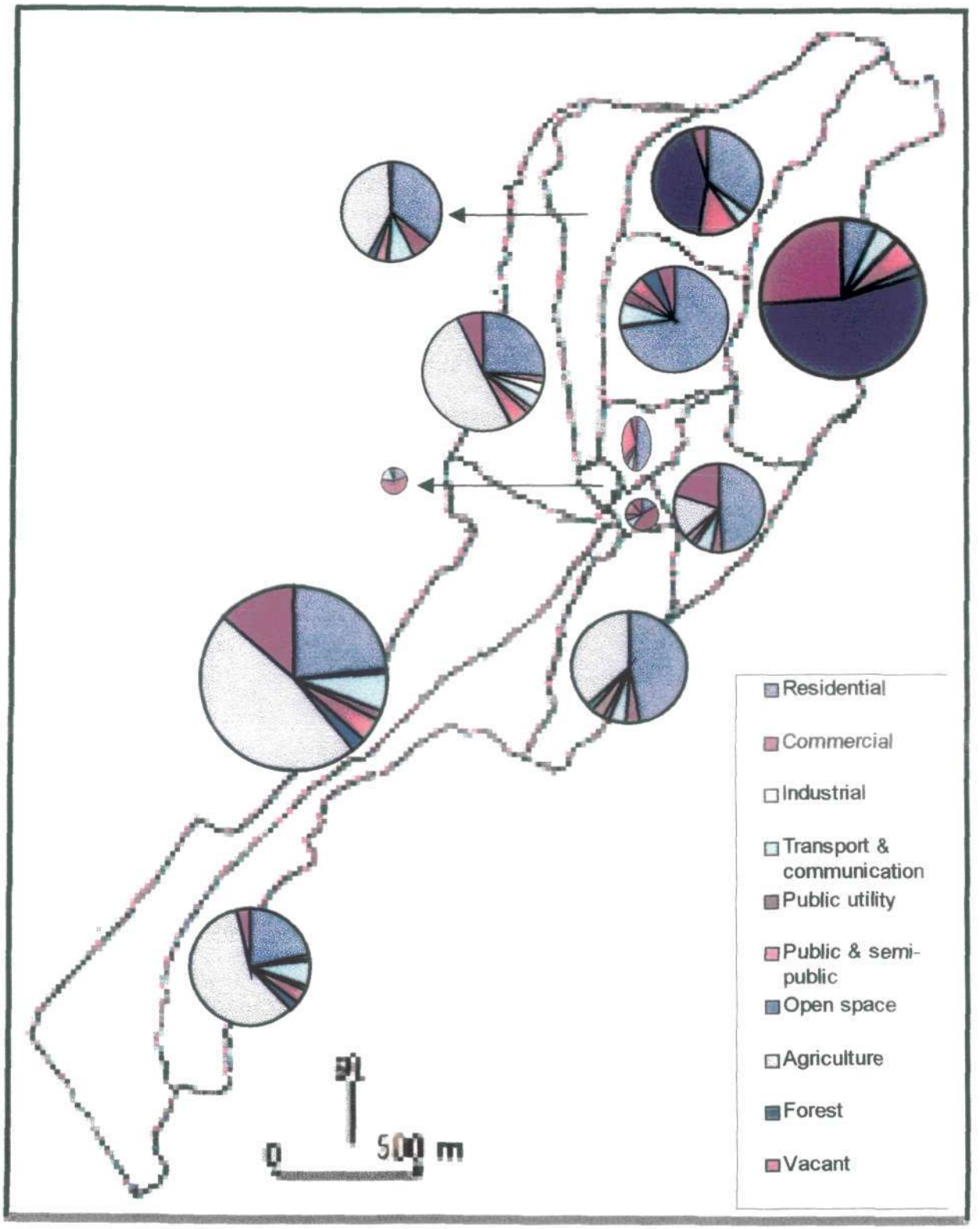


Fig. 3.5: Percentage of land under different land uses functions in Kurseong town in 1999.

3.3.1 Urban Use

(a) Residential

About 62 percent of the land under urban use is devoted to residential use or it can be said that this use covers about 29 percent of the total area of the town. Table 3.8 reveals that percentage of land under residential use is very low in two wards and these wards are known for their commercial activities. 50 percent of the wards have high percentage of land under residential use and out of these 50 percent, 25 percent of the wards (wards III, V and X) have about 75 percent of their urban land under residential use. These wards have become distinctively residential zones. Wards III and V have grown as new residential area where as ward X is an old residential area. In ward III, houses have come up on a land once owned by a tea company and the condition of houses in this ward is better than that of ward V, where a disorganised area with sub-standard housing conditions, called busty (slum) has grown along slopes not suitable for habitation. Wards –VIII, XI and X also have some *bustys*.

Table 3.8 : Land under residential use in different wards of Kurseong town.

Percentage of land under residential use	Category	No. of wards	Percentage of wards
Below 20	Very low	2	16.67
20 – 40	Low	1	8.33
40 – 60	Moderate	3	25.0
Above 60	High	6	50.0
Total		12	100.00

(b) *Commercial*

Commercial land use covers about 5 percent of the built-up area or about 2 percent of the total area of the town. Although land under this use is, except ward I, found in all the wards, but wards VI and VII have the maximum area under it. Since the town is small and easily approachable from most of the areas in and around the town, these two wards have become the nucleus of business activities and is the central business district of the town. Both

wholesale and retail businesses are conducted here. As horizontal expansion is not possible due to paucity of land, this area is experiencing a vertical growth and this has led to congestion. The Hill Cart Road and the railway line pass through the CBD and shops are found on both the sides of the road. A new shopping complex, built by the municipality, has come up in the CBD. Land under schools run by private enterprises has been added to commercial land use. These private schools are found in nearly all the wards of the town and have come up on existing houses or on privately owned vacant lands.

(c) *Industrial*

Share of this land use is insignificant. The cutlery servicing station in ward II has become defunct and has been converted into a training centre for carpet weaving by the D.G.H.C., which has also became non-functional. Railway press is located in ward XI and a few factories for processing tea are located in wards IX and XII.

(d) *Transport and Communication*

These covers about 13 percent of the built up area and includes land under roads, railways and radio station of the A.I.R. Ward IV has the lowest share (6.9 percent) and ward I has the highest share (21 percent) of the total land covered by it. A new un-metalled road has been constructed in ward V for improving communication system in the town.

Table 3.9: Land under transport and communication use in different wards of Kurseong town.

Percentage of land under transport and communication	Category	No. of Wards	Percentage of wards
Below 7	Very low	1	8.33
7- 14	Low	6	50.0
Above 14	Moderate	5	41.67
Total		12	100.00

(e) Public Utilities

Percentage of land under this use is the lowest in ward VII and the highest in ward IV. New areas have come under public utility like, in ward III worship places of Hindu and

Buddhists have come up, in ward XI, water reservoirs for supply of water to the town have been constructed by the P.H.E. and in ward XII, an 11 kV Sub-station of the West Bengal State Electricity Board has been constructed.

(f) Public and semi-public

These land uses accounts for about 12 percent of the built up area and the ward VII has the lowest share (2 percent) and ward I has the highest share (30 percent) of it. Table 3.10 shows that more than fifty percent of the wards are in the low category and two wards are in very high category. A number of government offices and educational institutions are located in wards I and IV. The Polytechnic College has been shifted to its new site in ward IX and the Darjiling Tea Research Institute has been set up in ward XII. The Siliguri Jalpaiguri Development Authority (S.J.D.A.) in ward VIII has constructed the Bus Terminus and the Fire Station.

Table 3.10 : Land under public and semi-public use in different wards of Kurseong town.

Percentage of land under public & semi-public	Category	No. of Wards	Percentage of wards
Below 6	Very low	4	33.33
6 – 12	Low	3	25.0
12 – 18	Moderate	2	16.67
18 – 24	High	1	8.33
Above 24	Very high	2	16.67
Total		12	100.00

(g) Open Space

Playgrounds and parks are part of this land use and comprise about 4 percent of the built-up area. Except wards VI and VII, this land use is found in all the wards. In ward VIII, area of the playground also known as Montiviot Ground has been extended and in ward XI an obelisk with a small garden and a watchtower at the Eagles Crag has been constructed.

Fig. 3.6 : Land use patterns in 1999 in wards (a) I, (b) II and (c) III.

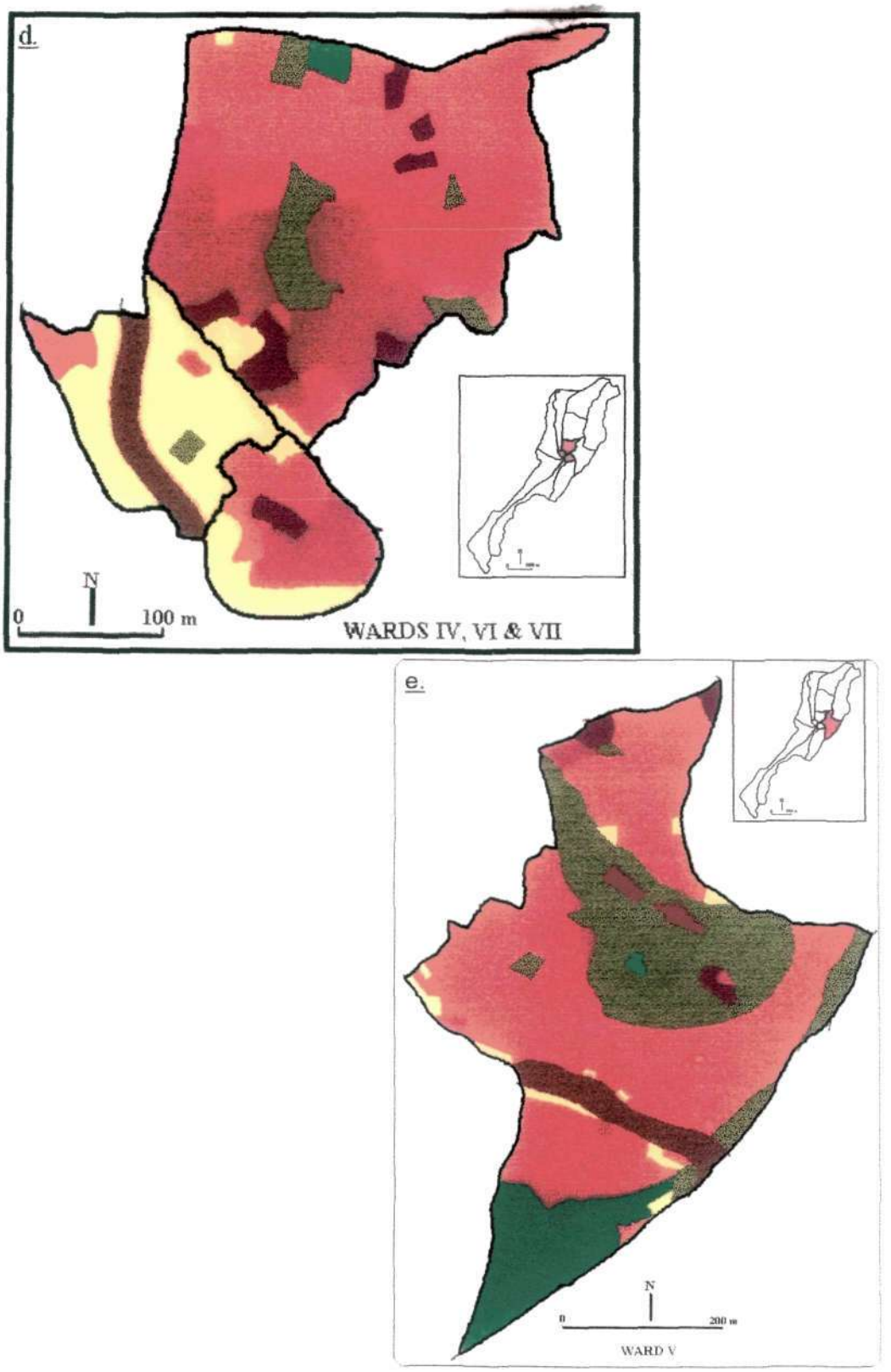


Fig. 3.6 : Land use patterns in 1999 in wards (d) IV, V and VI and (e) V.

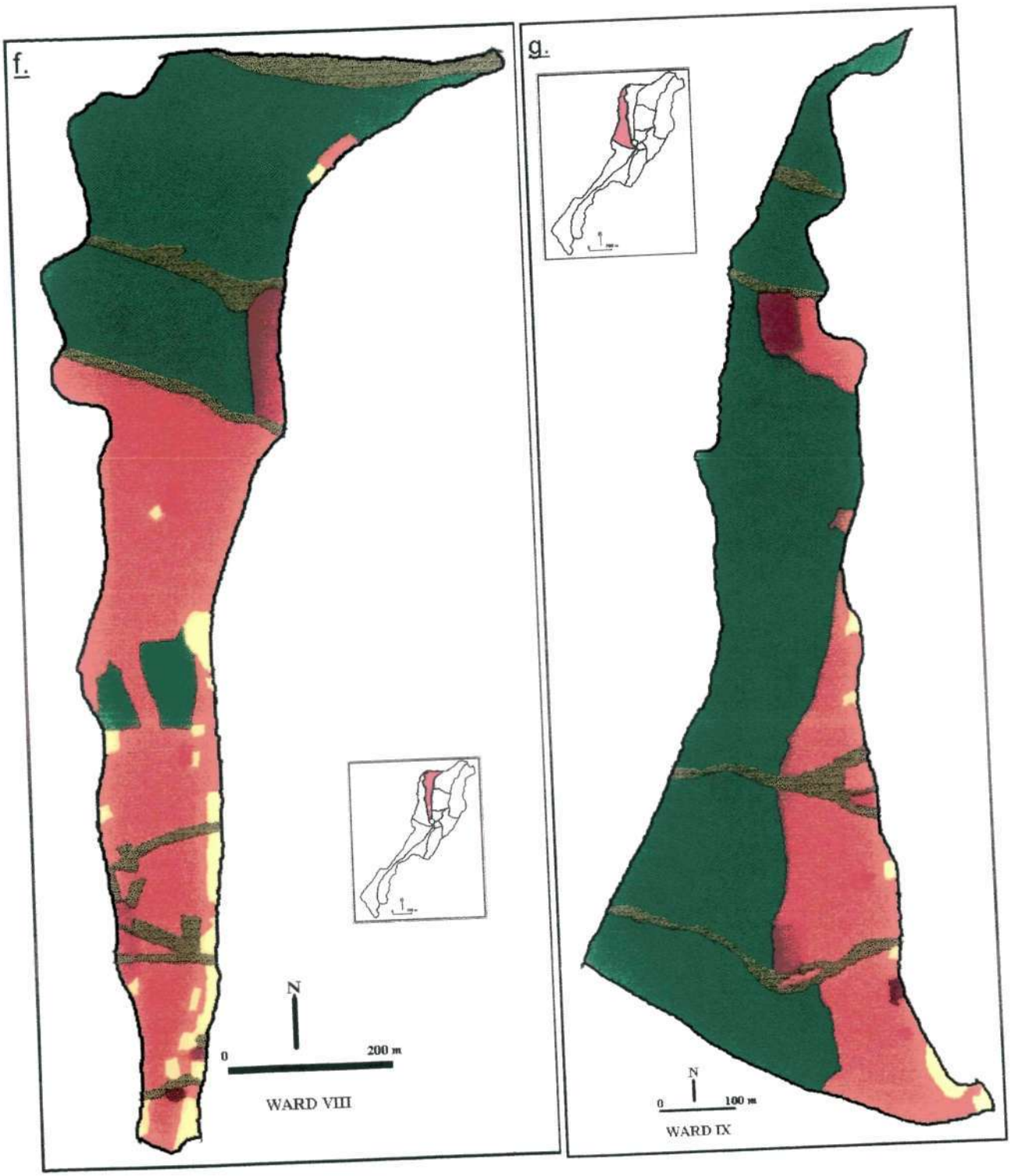


Fig. 3.6 : Land use patterns in 1999 in wards (f) VIII and (g) IX.

Fig. 3.6 : Land use patterns in 1999 in wards (h) X, (I) XI and (j) XII.

3.3.2 Non-urban Use

Area under non-urban use is very less in wards III, IV and VIII.

(a) Agriculture

Tea gardens cover more than 40 percent of the land in wards VIII, IX, XI, and XII.

(b) Forest

Reserved forest and vacant land still covers a substantial area in wards I and II.

The spatial distribution of different categories of land use for the different wards of the town is shown in Fig. 3.6 (a-j).

3.4 CHANGES IN LAND USE PATTERN – 1977-99

The segregation and aggregation of different functions in a city are the result of a long period of evaluation. The change in urban land use is, therefore, an important aspect of land use study.

The spatial structure of the town is the result of three forces of attraction and integration, of dispersion and disintegration and of spatial differentiation (Dickinson, 1964). The first two forces generate vertical growth and horizontal expansion. The third force results into the segregation of the buildings, persons and activities. With the age and growth of urban landscape, the spatial structure also changes in consonance with the land use. Any change in economic and social conditions, caused either by political or natural forces, also brings about a remarkable change in the land use patterns. Sometimes the changes are so adverse that they start posing problems of various kinds instead of facilitating urban functions (Singh, 1979).

The changes in land use functions have been studied during the period 1977-99. The year 1977 has been taken into consideration because of the non-availability of information on land use function before that period. The town under study is developing by functional movements and growth of the built-up area within and outside the municipal limits. These functional movements represents the impact of different social dynamics governed by a number of developmental factors noticed during different periods. Fig. 3.7 shows that two urban functions i.e., residential and commercial and to a certain extent public utility and public

and semi-public uses have experienced the maximum change. In other urban functions no remarkable changes are discernable but area under industrial function has decreased. High demand of residential areas is primarily responsible for the increase in built-up area of a town. Hence, this function experiences the highest rate of increase (94.56%) as compared to other uses during 1977-99 (Fig.3.8).

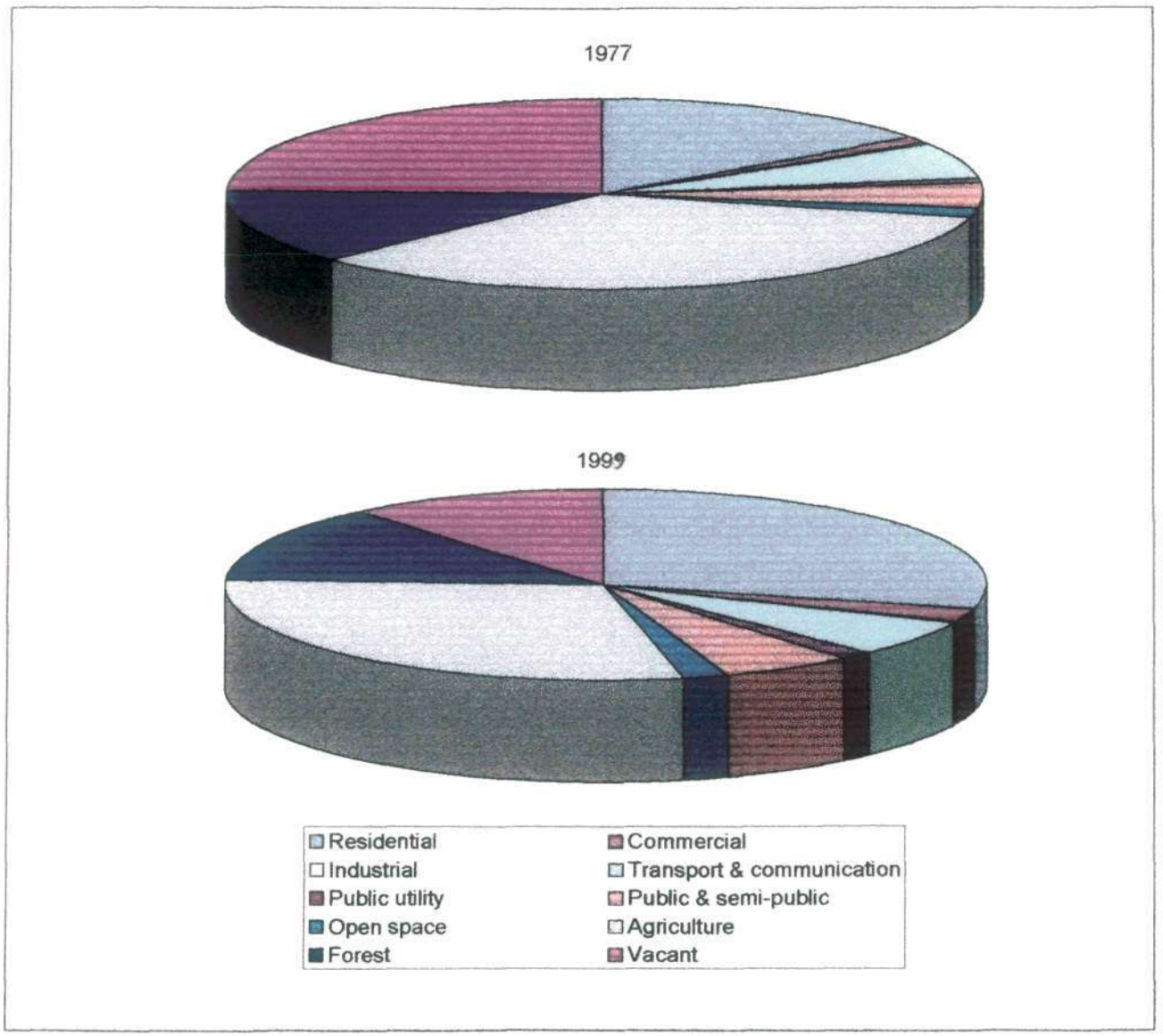


Fig. 3.7 : Land use pattern during 1977 and 1999.

About 18 percent (Table 3.11) of the total land of the town has experienced a change in land use pattern – from one function to another during 1977-99 and its spatial distribution in

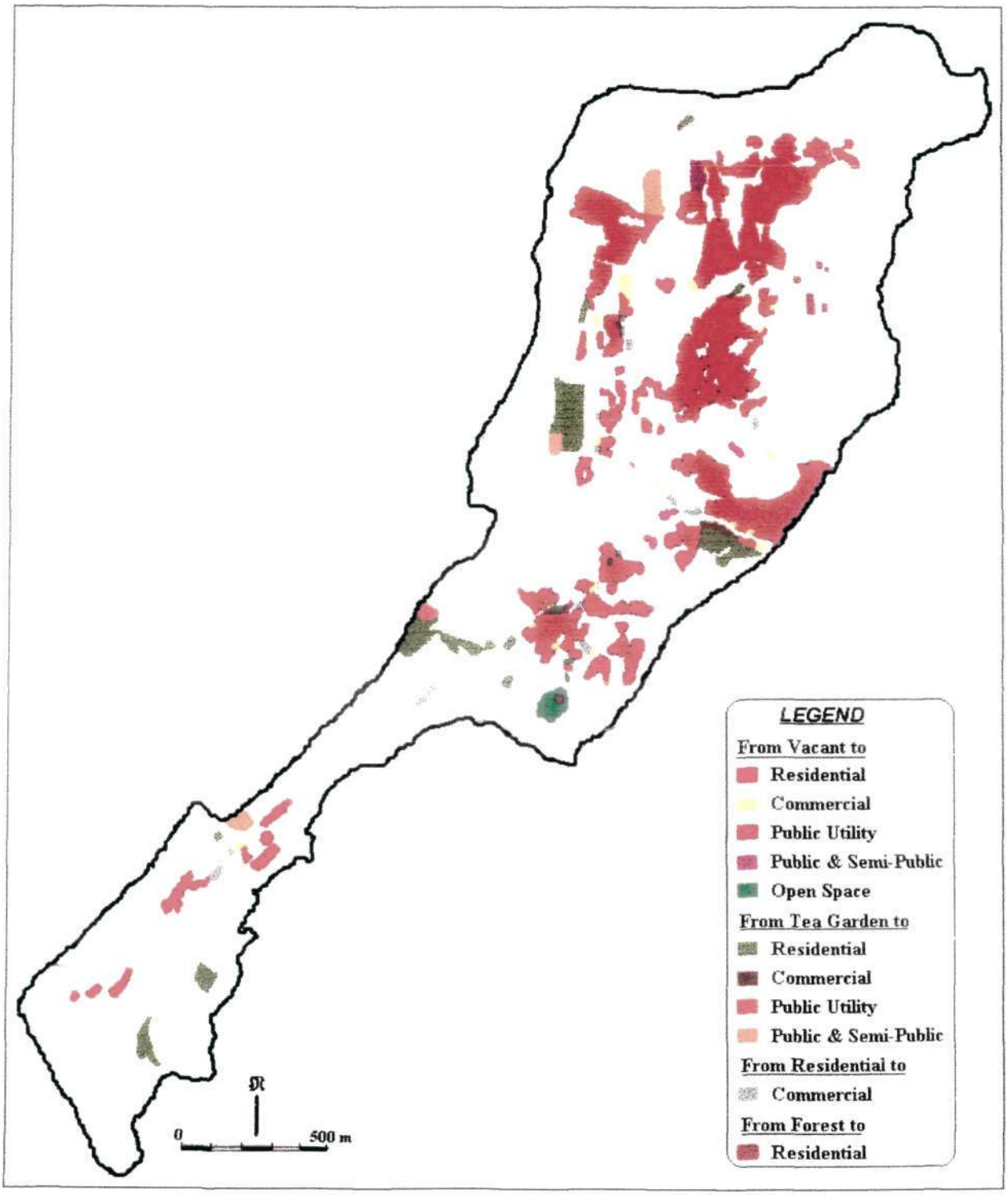


Fig. 3.8 : Changes in Land use pattern during 1977-99.

Table 3.11 : Change in land use pattern during 1977-99.

Gain / Loss in area (in ha)	Residential	Commercial	Transport and Communication	Public utility	Public and semi-public	Open space	Total area
Residential	-	2.996	-	-	0.041	-	3.037
Industrial	-	-	-	-	0.287	-	0.287
Agriculture	15.852	0.106	-	1.708	4.03	-	21.696
Forest	0.361	-	-	-	-	-	0.361
Vacant	58.587	2.420	0.226	0.773	2.35	1.957	66.313
Total area	74.800	5.522	0.226	2.481	6.708	1.957	91.694

different wards of the town are shown in Fig. 3.9 (a-j). During the period 1977-99, the land under urban use has increased by about 60 percent and this has happened at the expense of agricultural and vacant lands. Three wards (I, VI and VII) have experienced very less (less than 10 percent) change in its built-up area whereas two wards (V and X) have experienced an increase in its built up area by more than 90 percent. Nine wards have experienced an increase in urban land use more than the town's average.

3.4.1 Urban Use

(a) Residential

Built-up area occupied by residences have increased by about 95 percent in the town and this was possible due to the availability of vacant land and encroachment on the tea garden areas and on a smaller scale on forest's land. Maximum transfer of land from vacant to residential use has taken place in eight wards. Agricultural land has been encroached upon in five wards out of which it was the maximum in two wards (IX and XII). Encroachments of forest land for residential purpose has taken place in ward I.

The demand for space has resulted in a change of building types – from wooden single storey buildings to concrete buildings, usually two or more storied. This change is most visible in the Central Business District and in the areas surrounding it. This has increased congestion

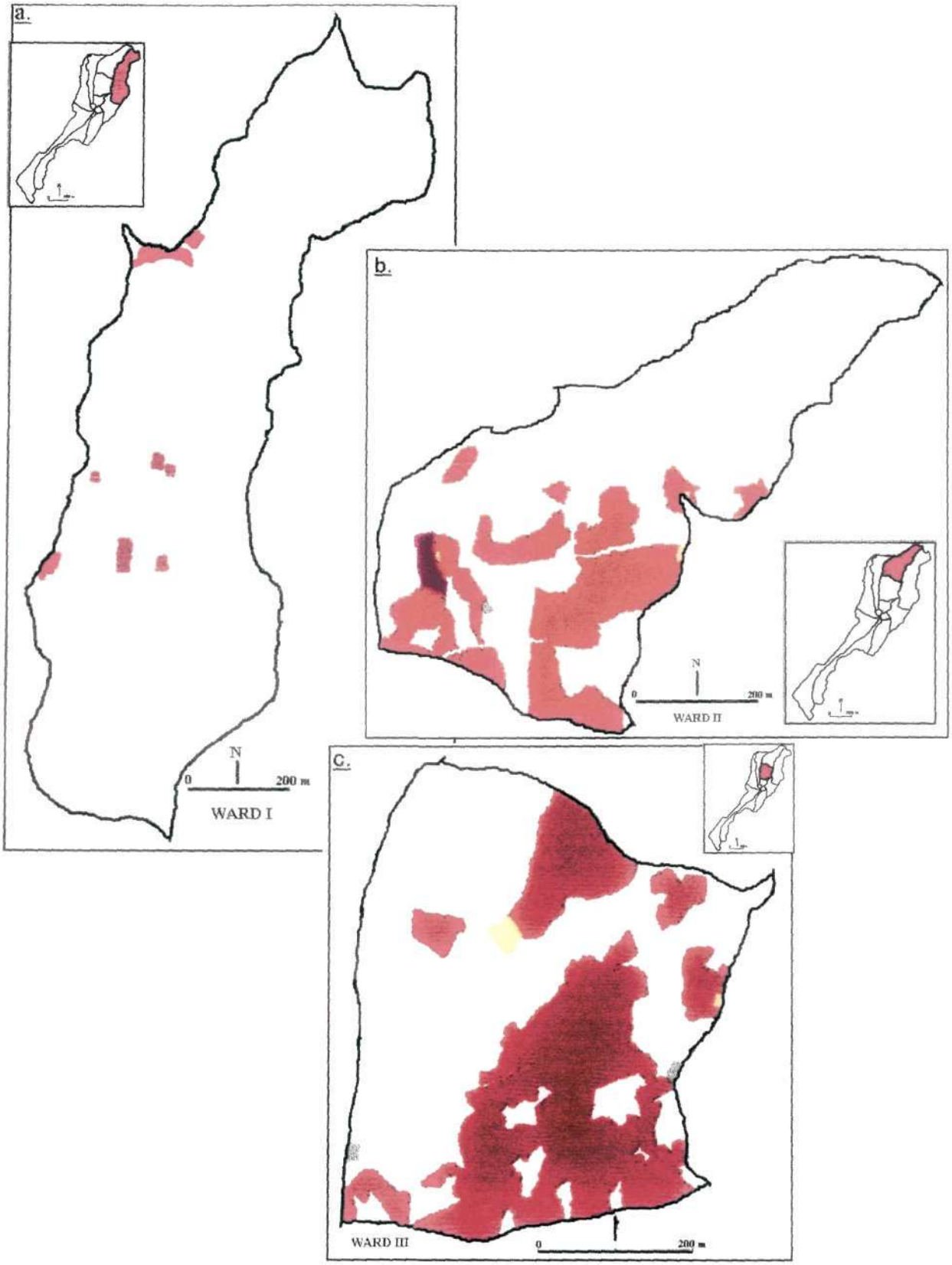


Fig. 3.9 : Changes in land use pattern during 1977-99 in wards (a) I, (b) II and (c) III.

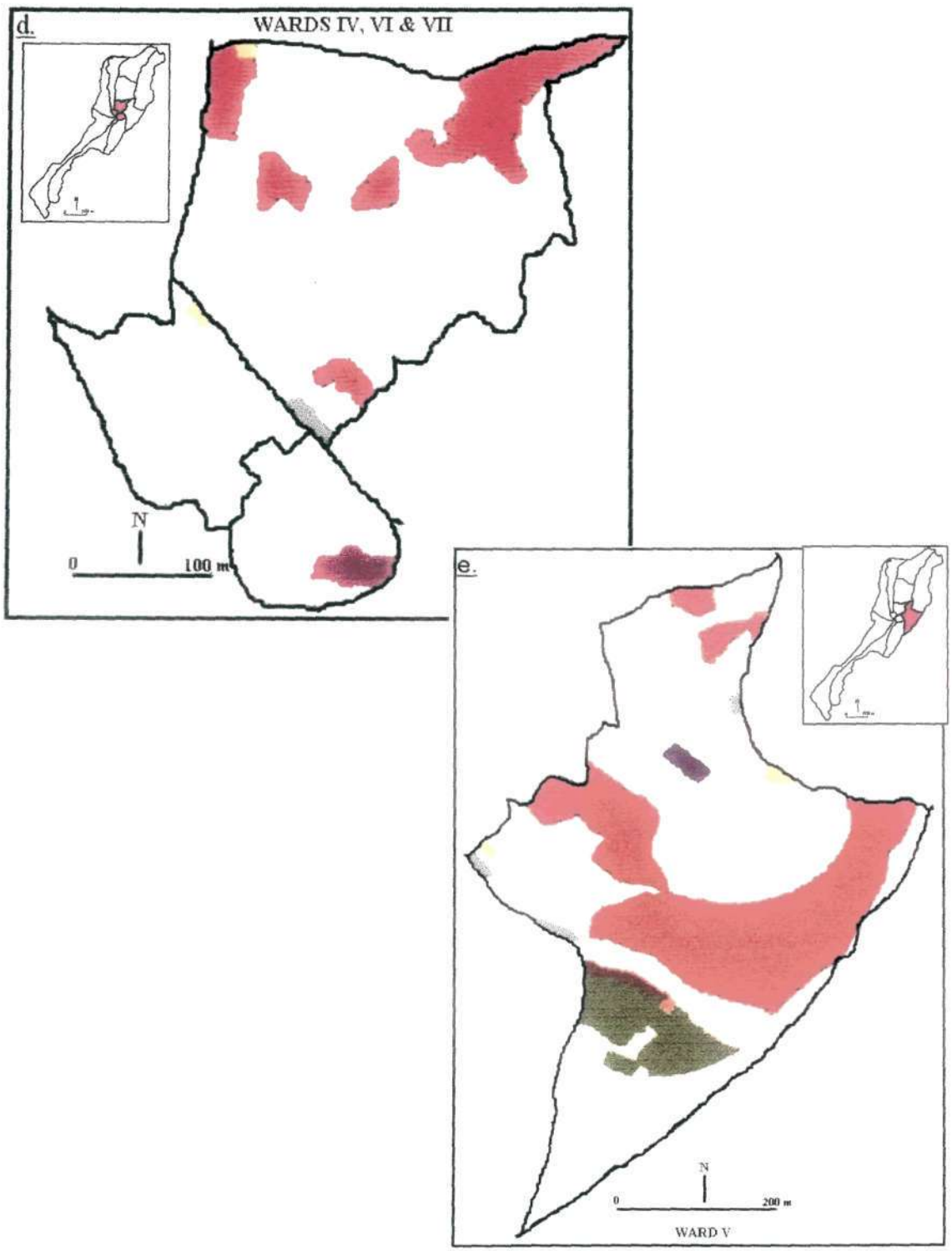


Fig. 3.9 : Changes in land use pattern during 1977-99 in wards (d) IV, VI and VII and (e) V.

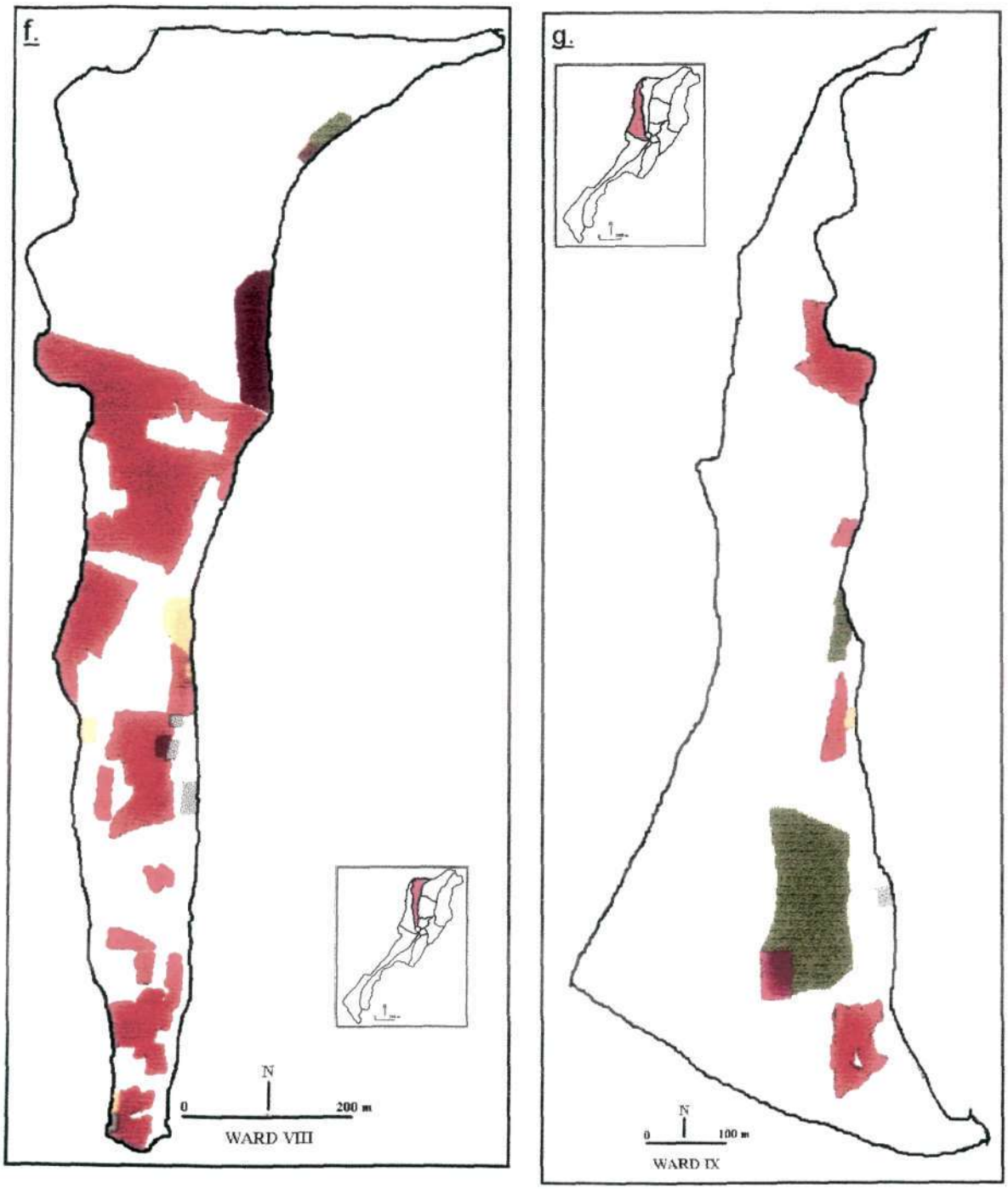


Fig. 3.9 : Changes in land use pattern during 1977-99 in wards (f) VIII and (g) IX.

Fig. 3.9 : Changes in land use pattern during 1977-99 in wards (h) X, (I) XI and (j) XII.

and most of the buildings are coming up without following the municipality building rules. *Bustys* have come up in wards III, V, VIII, IX, X and XII and here the conditions of the houses are sub-standard.

(b) Commercial

Built up area occupied by commercial uses have almost doubled and this was made possible by two factors – (a) increase in population and (b) growing importance of Kurseong as an educational centre. Transfer of land for commercial uses have taken place mostly from residential and vacant lands. Shops have come up in almost all the wards. In certain cases existing buildings have been converted into schools or boarding houses. Schools run by private owners have come up in the northeast, southeast and southwest of the town.

(c) Industrial

No new industry has come up in Kurseong town. The Cutlery Servicing Station which was set up during the Second Plan period to render assistance and technical know-how to traditional artisans manufacturing tea garden implements had been closed and later on it was converted into a training centre for carpet weaving and that has also become non-functional.

(d) Transport and Communication

Except an un-metalled road in ward V, no new road has been constructed. Even though the pressure on existing roads are increasing, especially on the Hill Cart Road and the Pankhabari Road, there is hardly any scope for either widening or making a new road due to the terrain of the land.

(e) Public Utility

Land under public utilities has increased specially in wards III, X, XI and XII.

(f) Public and Semi-public

Area under public and semi-public uses has increased in eight wards.

(g) Open space

Lack of open space is evident and except the park at Eagles Crag and an extension of the Montiviot Playground no new area has been added.

3.4.2 Non-urban use

About 54 percent of the vacant land available in the town has been utilised for different purposes especially for residential uses. Encroachments on tea garden lands have taken place for residential uses.

3.5 INTENSITY OF URBAN LAND USES

The intensity of urban land uses decreases away from the city centre. To test this hypothesis, a number of concentric circles within the urban area were drawn on the land use map of 1977 and 1999 of Kurseong town, at an interval of half a kilometre from the centre of the Central Business District. The different categories of land uses were measured within all the circles and then the percentages of all the uses in each circle were calculated (Fig. 3.10). In doing so, however, only the areas falling within the urban boundary were considered.

3.5.1 In 1977

In 1977, the following characteristics were prevailing in the town:

(i) The residential areas were high in two zones. Near the Central Business District centre, these covered 21.3 percent of all the uses and in the next zone the percentage was 20.28. The residential areas decreased outwards and it decreased to 2.1 percent in the fringe areas.

(ii) The commercial use was high (5.53 percent) near the centre because of the location of the market. Outwards, the percentages of commercial areas were negligible.

(iii) The distribution of industries was irregular.

(iv) Area under transport and communication was high at the centre due to the presence of the station of the All India Radio and the major roads like Hill Cart Road and Pankhabari Road. The percentage was also high at a distance of 2 km from the town centre.

(v) The land use under public utilities was considerable (1.95 percent) at the centre and remains more or less same till 2 km distance.

(vi) The land use under public and semi-public uses increased outwards from the town centre and was the maximum at a distance of 1km.

(vii) The area under open space was less at the centre and increased outwards with a maximum at a distance of 2 km.

(viii) The agricultural land covered 38.27 percent at the centre and decreased outwards till a distance of 2 km and after that the share increased to 79.68 percent in the fringe areas of the town.

(ix) Forest land was found between 0.5 km and 2 km from the town centre.

(x) Vacant lands were high in the C.B.D. centre and were considerable in all the zones with the highest in the 1.5 to 2 km distance zones.

3.5.2 In 1999

In 1999, the following characteristics are prevailing in the town:

(i) The residential areas are high in two zones. Near the C.B.D. the residential use covers 41.52 percent of all the uses and in the next zone the percentage is about 39 percent. The area under residential use decreases away from the centre of the town and it decreases to 6.3 percent in the fringe areas of the town.

(ii) The commercial use is high (about 8 percent) near the centre. This is so because the market is located here. Outwards, the percentage of commercial area to total area decreases.

(iii) The industries found in Kurseong are mainly the tea garden factories and the railway workshop and the distribution is irregular.

(iv) The transport and communication use is high (8.08 percent) at the centre due to the presence of roads and the location of the All India Radio Station. The use remains more or less same away from the town centre.

(v) The land use under public utilities is considerable (1.95 percent) in the centre and remains more or less same till 2 km distance and after that it is absent.

(vi) The land use under public and semi-public uses is considerable (about 5 percent) near the centre and increases outwards till one and half kilometre distance from the centre. The use decreases thereafter in the fringe areas.

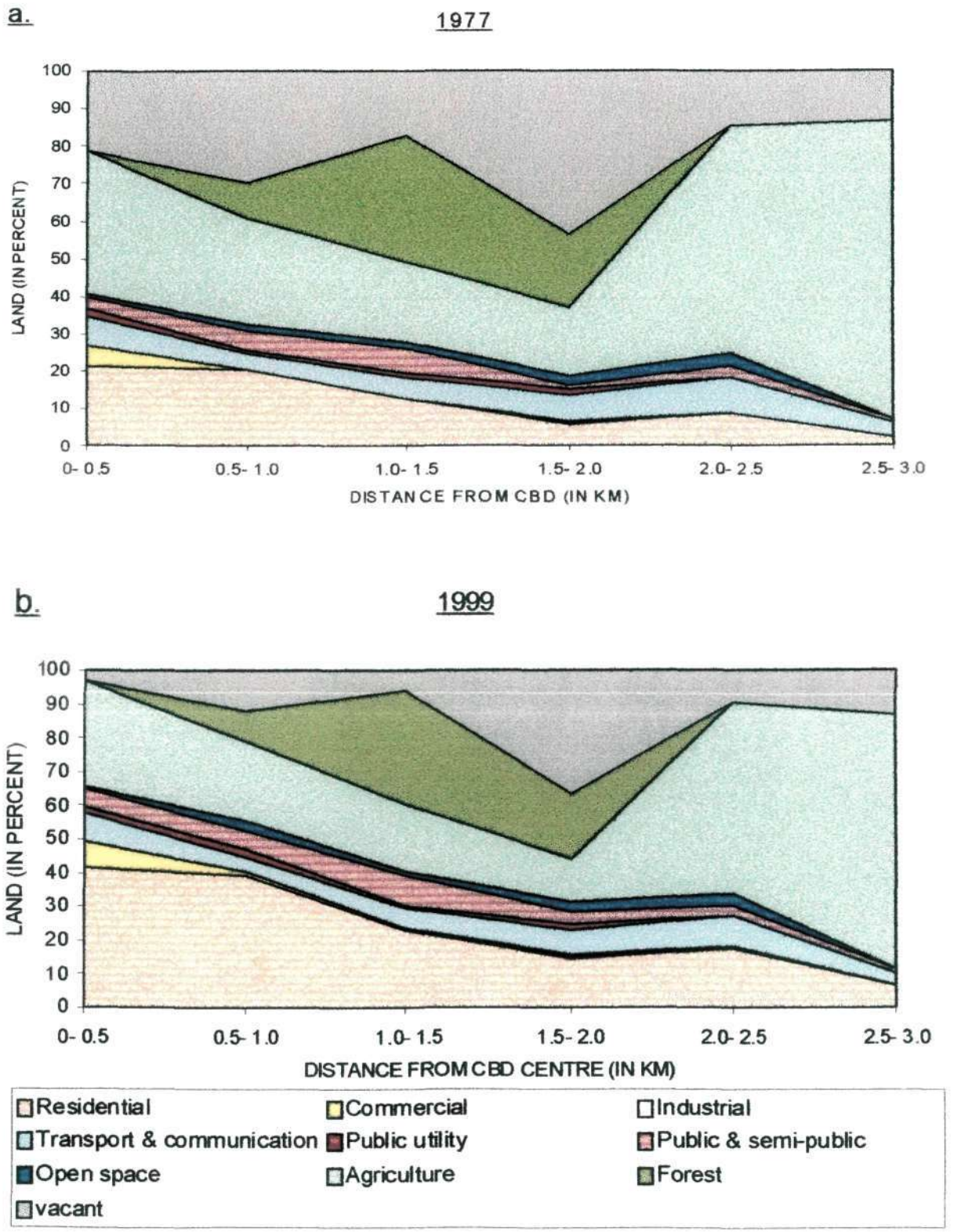


Fig. 3.10: Variation in the proportion of land use with distance from the CBD in Kurseong town.

(vii) The area under open space is very less at the centre and increases in an irregular manner and ends rather abruptly.

(viii) The agricultural land covers 31.82 percent at the centre. It decreases irregularly outwards and after a distance of 2 km, the percentage of agricultural land use increases and at a distance of 3 km the share increases to 3/4th of all the uses.

(ix) Forest is absent at the centre and increases to 9.19 percent and 33.74 percent respectively of the total land uses away from the town centre . The share decreases after this and is not found after 2 km distance.

(x) Vacant lands are very less near the commercial centre but are found in all the zones. The share of the vacant land is very high (about 37 percent) at a distance of 1.5 km from the centre.

3.5.3 Changes in intensity of land uses during 1977-99

Land use under residential use has increased tremendously in all the zones with the maximum at the centre. Land under commercial use has also increased in all the zones. An increase in the share of these uses has taken place due to the utilisation of vacant land and encroachment of agricultural land.

3.6 EFFECT OF LAND USE ON LAND VALUE

Urban geography is largely concerned with the city as a commercial system, as the place where commodities and services are manufactured, bought and sold. Land is a vital commodity in cities, that closest to the main centre of activity being the most valuable. Thus the position within the city of any site affects its monetary value which, in turn, affects its eventual use for offices, industry or housing (Murphy, 1974.). Commonly a Central Business District with banking, insurance and main offices of corporations adjacent to major retail shopping areas is found at the city centre and has high land values. Away from this central area land values tend to decrease. In most of the western cities as well as in Indian cities, land value decreases outward from the hub of the major shopping centre (Singh, 1979). To find out the gradient of land value in Kurseong, help of the Registration department of the SDO's office was taken. Presently, the department of Land and Land Revenue fixes the minimum value of land per square metre in different parts of a town. On the basis of information

received from the Registration department, the map of land values has been prepared (Fig.3.11)

The value of land is very high along the National Highway. The highest value (above Rs. 3,900/- per square metre) is observed in ward VII. The Gudri Bazaar in ward VII also has high land value. At road junctions and along the roads, the value of land is higher than in the areas poorly served by roads. The high and medium land value areas are observed side by side in the central part of the town. A comparative study of land values and land use shows a certain relations. The commercial areas of wards VI and VII have very high land values. The residential areas of wards IV, VIII, IX, X, XI, XII lying near the commercial area have medium land values on account of their locations. The commercial use has a dominant control over land values in Kurseong. However, the generalisation supports the view that gradient of land values decreases away from the centre of the town.

CONCLUSION

Of the total area of the town (504.97 ha) only 29 percent was developed in 1977. About 51 percent of the developed area was devoted to residential use of which it was high in 33 percent of the wards in the town. Commercial land use was more important at the centre of the town. Land use under industries was insignificant. Transport and communication covered the 2nd highest and public and semi-public land uses covered the 3rd highest percentage of the developed area in the town.

In 1999, the developed area in the town increased to 47 percent of which it was above 75 percent in 4 wards. In ward I the developed area is the lowest. About 62 percent of the developed area or about 29 percent of the total land are devoted to residential use. Wards III, V and X have about 75 percent of their urban land under residential use and of these wards III and V have grown as new residential zones. Wards like III, V, IX and X have experienced the growth of sub-standard houses. Commercial land use is still concentrated at the centre of the town where both wholesale and retail business activities are carried out. Transport and communication land use covers 13 percent of the built up area and its share is maximum in ward I. Land under public utilities is the lowest in ward VII and the highest in ward IV. Public

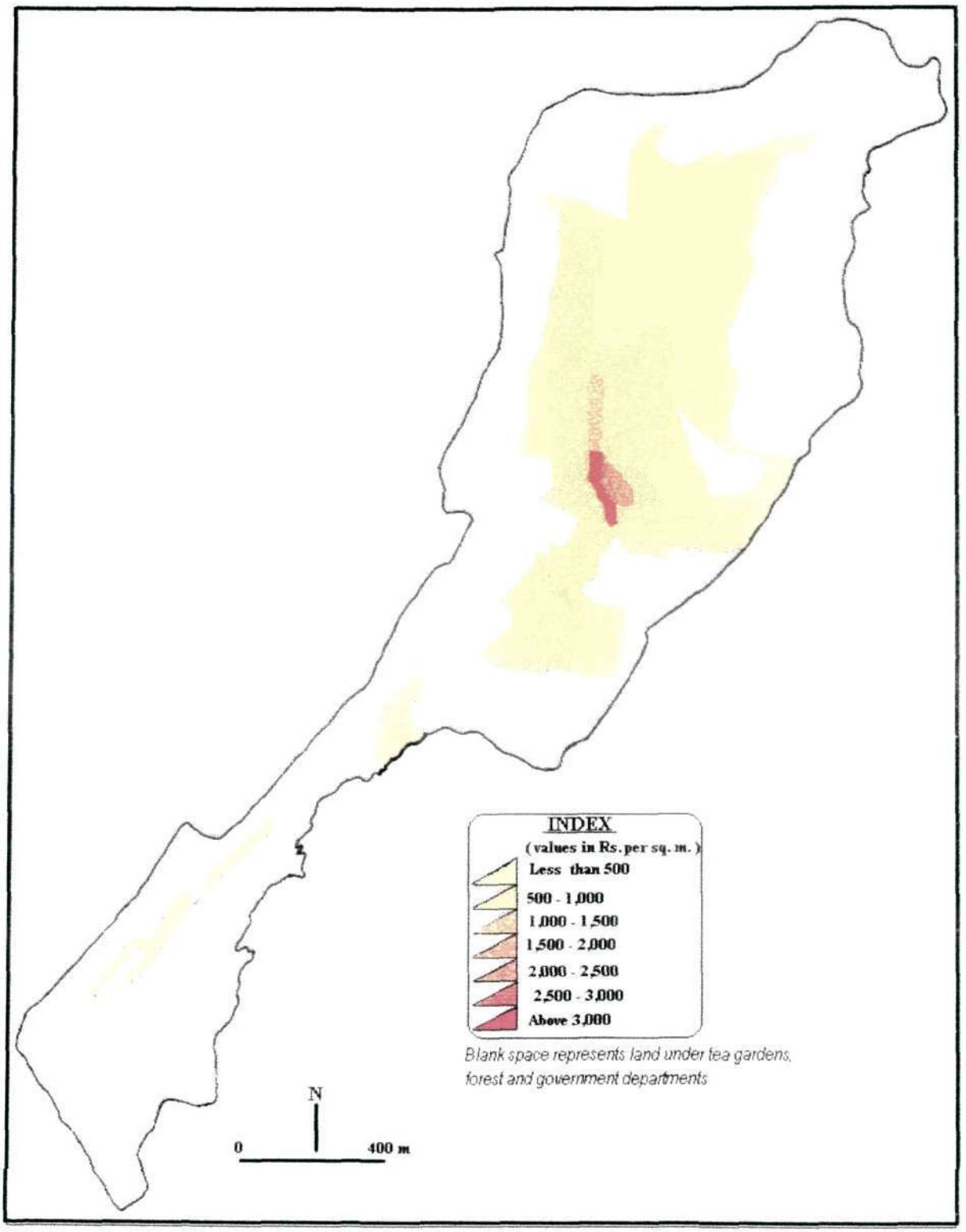


Fig. 3.11: Land value in Kurseong town (1999).

and semi-public land use is very low in 4 wards and very high in 2 wards (I and IV). Playground and parks account for about 4 percent of the built up area of the town.

During 1977-99, built up area in the town has increased by about 60 percent and this increase was above 90 percent in wards V and X. Residential and commercial land uses have experienced the maximum growth. In eight wards, residential land use has increased due to the availability of vacant lands. In two wards (IX and XII) encroachments of agricultural land for residential use was the maximum. Increase in population and the growing importance of Kurseong town as an educational centre have led to increase in commercial land use. The town has not experienced any growth of industries.

The intensity of land use reveals that in 1999, the residential land use doubled at the centre of the town in comparison to 1977, but in the outer zones the percentage decreases. Commercial land use has increased in all the zones. The land use under public utility is not found beyond a distance of 2-km from the centre of the town. The public and semi-public land use decreases in the fringe areas. Vacant land is negligible near the centre of the town.

The land use pattern reflects the use of land by different socio-economic functions in the town. Some of these functions have increased in the town over the years. The functions like educational institutions, trades and commerce and transports and communication reveals the socio-economic status of the town and its people.

CHAPTER IV

SOCIO-ECONOMIC FUNCTIONS AND THEIR DISTRIBUTION

INTRODUCTION

Man, a social creature, for his living and existence requires some social facilities and scope for cultural activities especially when he is in an urban society. Though the need of amenities for different communities is not uniform, the civic amenities generally express a common-style living. The terms infrastructure, amenities, services and facilities are often inter-changeably used to denote the provisions made to satisfy some of the basic needs of the people. These needs cater to a variety of requirements from the basic life-sustaining needs like safe drinking water, health and nutrition services, sanitation, housing and sewage disposal to 'felt needs' like educational facilities including libraries, shops, hotels, restaurants and recreational facilities, public transport facilities, electricity as a consumer good and police protection.

The term 'social infra-structure' which is more comprehensive in nature and includes a variety of amenities/services/facilities is gaining greater currency (Prakasarao, 1983). In any urban centre municipal authorities try to deliver all types of urban amenities and utility services to the town dwellers but creation of a full-fledged urban society is a far cry. Still, the minimum urban amenities that are thought essential for the urbanites such as piped water supply, streetlights, sanitary and conservancy services are restricted to limited parts of the town. Lure of amenities availability boost the rush of people from smaller towns or semi-urban areas to big cities and towns, where it causes congestion. The town under study shows that it enjoys varying amenities and utility services (Fig.4.1). Insufficiency of availability of data and information form disadvantages in bringing out the exact picture of the existence of such services and an intensive field survey was carried out at different offices and wards to fill up the shortage of information.

4.1 EDUCATIONAL INSTITUTIONS

The educational institutions play a very important role in the growth of Kurseong town. Since its inception as a municipality in 1879 the town has played an important role as a centre of education. The first school was started in 1879. Since then it has seen a steady rise in

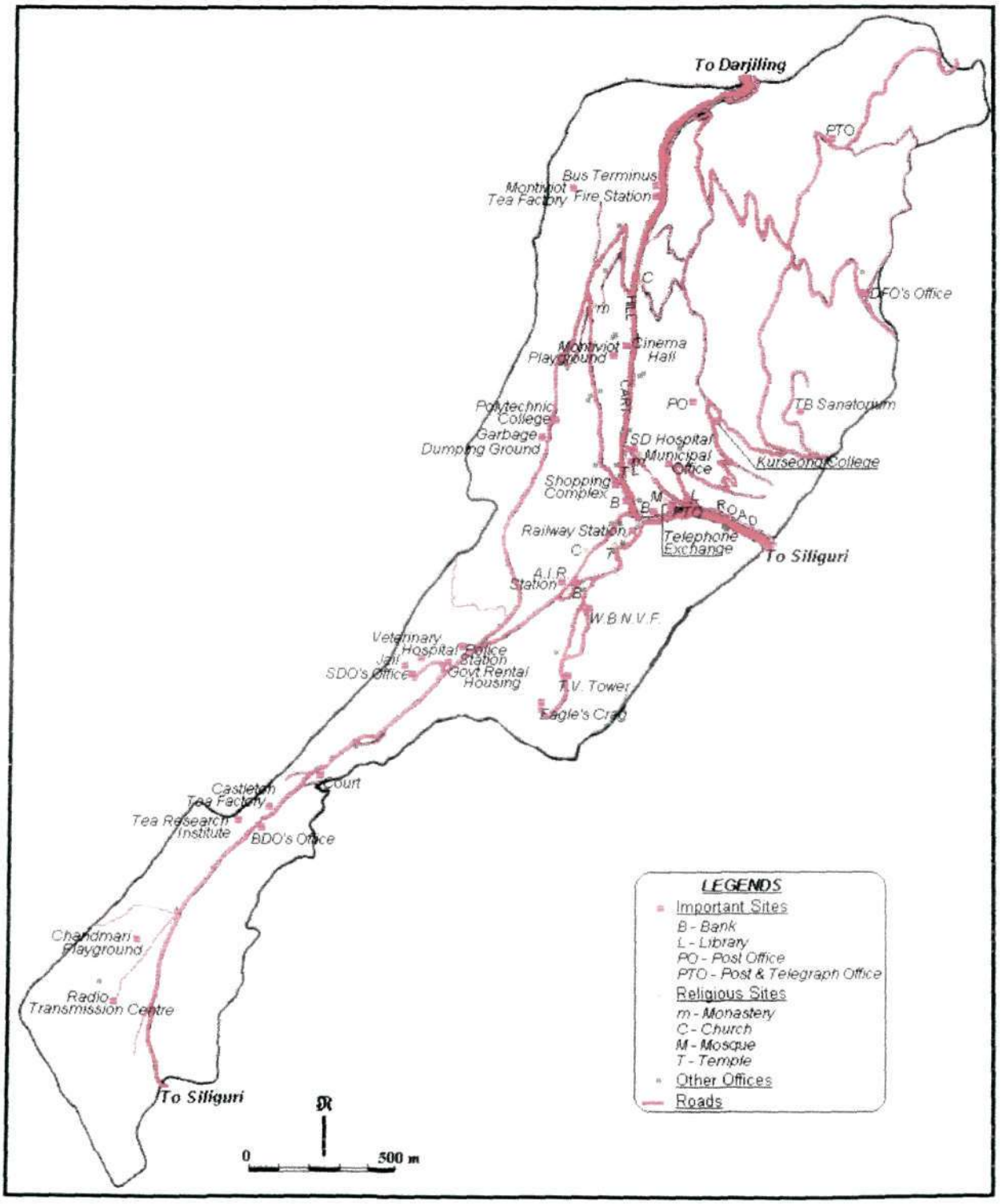


Fig. 4. 1: Location of different socio-economic functions in Kurseong town.

the number of institutions and the maximum rise in the last two decades.

4.1.1 Location

During the early phase, i.e. pre-1900 period, three schools to impart education to the Europeans were established in Kurseong town. Out of these three, two were meant for the girls and one for the boys. The three schools namely Dow Hill School, Victoria School and St. Helen's Convent were set up within the municipality. Goethals Memorial School was set up in 1904 and came up along the Hill Cart Road between Kurseong and Darjiling towns, far away from the municipality. When these schools were set up they were slightly away from centre of the township but later on when new schools were started they were mainly in and around the centre of the township (Fig. 4.2). Due to the shortage of land in the town there is again a reversal in the trend and new private schools are coming up outside the municipal boundary mostly near Gidda Pahar, 3 km from the town centre. With the exception of ward VII, schools are found in all the wards of the municipality. The maximum concentration schools are in the wards V, IX and XI and the least in the wards II and VI (Fig. 4.3). The main reason for not having any school in ward VII is because of the concentration of business establishments. Pusparani Roy Memorial School is situated just near the meeting point of the Acharya Bhanu Path with the Hill Cart Road, in front of the Kurseong Railway Station.

4.1.2 History

The first school to come up in Kurseong was a Government school at Constantia in 1879. Sir Ashley Eden, the then Lieutenant Governor of Bengal, started the school for the benefit of railway personnel as Kurseong was made the headquarters of the Darjiling Himalayan Railway. In 1880 the school was shifted to Dow Hill and classes were started in a barrack left vacant by the Darjiling Himalayan Railway with the completion of the railway line between Siliguri and Kurseong. The school continued as a co-educational institute for few years and in the meantime a new site was selected in Dow Hill and in 1898 the Boys section was shifted to the new site. At the old site some more buildings and a dormitory were added and a school meant only for the girls was started. These two schools, namely Victory Boys' School and Dow Hill School, were basically set up for the wards of government servants of European origin but later on students from Indian families were also allowed to join.

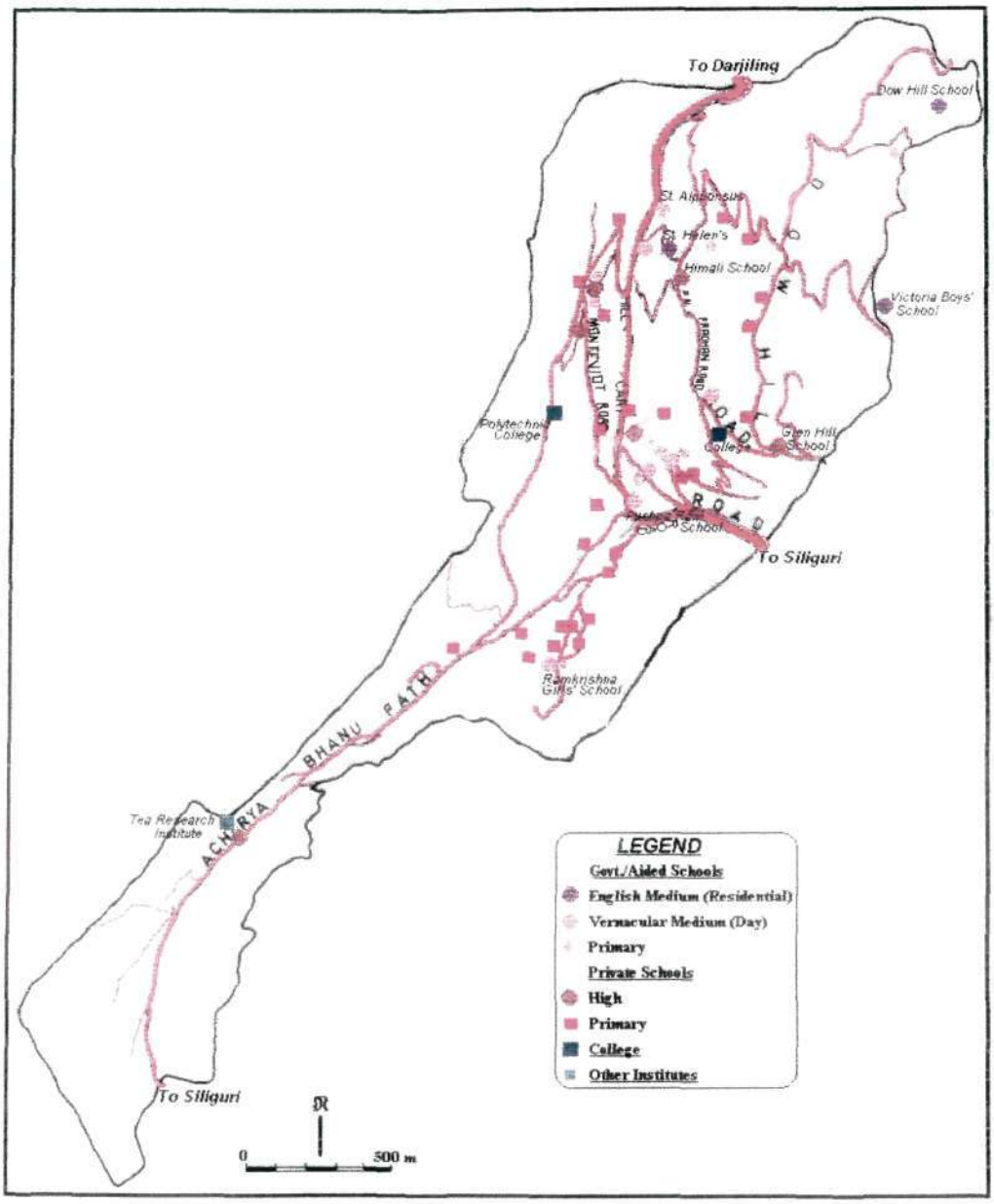


Fig. 4.2: Distribution of Educational Institutions in Kurseong town.

The next school to come up was St. Helen's Convent and was started by the Daughters of the Cross in 1889. This school was initially started at Fatak Dara near Constantia and was later on shifted to its present site in ward III. The school was started to impart education to the European girls. In 1904 another school was started for the Europeans and it was meant only for the boys. This school was started by the Goethals Brotherhood and was set up 3 km north-east of the town, along the Hill Cart Road.

These four schools, out of which two were government schools and two missionary

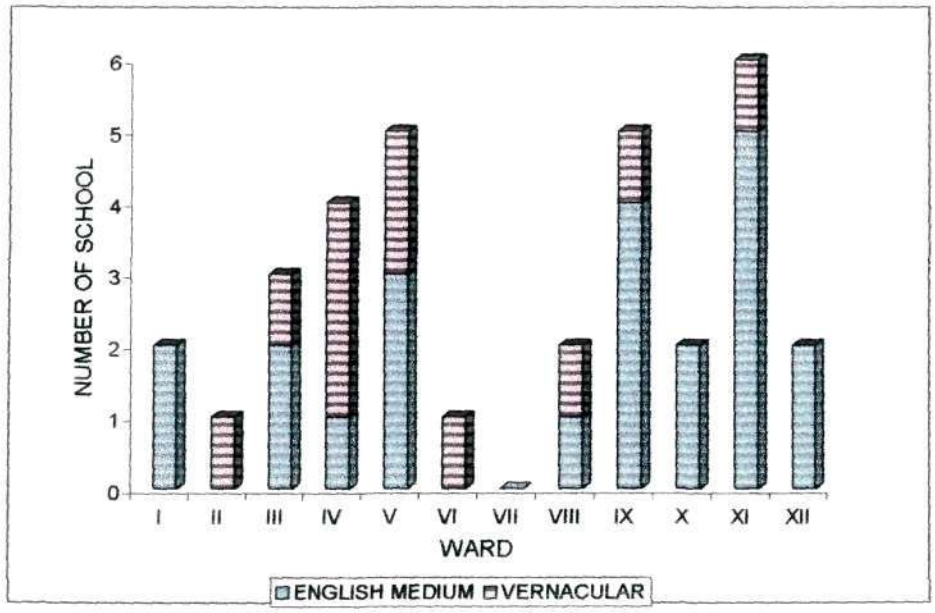


Fig. 4.3 : Ward wise distribution of schools.

schools, were the first to be started in Kurseong. And one important point to be noted here is that these schools were started in large campuses with spacious buildings and playgrounds which are conspicuously absent in the present day privately-run English medium residential schools coming up in Kurseong.

In 1905, the Scott's Mission started a missionary school for girls. This school was started mainly for the local populace and education was imparted through mother tongue. The next school was started in 1935 and was meant for the poor people of the locality. In 1937, the Alphonsus School, set up by a Canadian missionary, was started mainly for the local people and in this school more stress was given to vocational training. In 1943, Pushparani Roy Memorial School was started and in 1944 the Daughters of the Cross started another school in the town but both were meant for the local population.

With the passage of time more schools were opened up but mainly for the benefit of the local population. In 1964, the Kurseong Polytechnic College and in 1967, the Kurseong College were started at 'Kakina House' (ward IV). Later on in 1980 the degree college was shifted to its present site at ward V and in 1991 the polytechnic College was shifted to its present campus in ward IX.

4.1.3 Classification of the schools

There are about 44 schools in and around Kurseong Municipality, out of which 40 are within the municipality and 4 are outside the municipal boundary. Of the 40 odd schools in the municipality 25 are primary schools, 11 are secondary schools and 4 are higher secondary schools. Three secondary schools and one higher secondary school are situated outside the municipal boundary.

Out of the 25 primary or junior schools 5 schools impart education through vernacular medium and for the rest of the schools medium of instruction is English. Of the 14 secondary schools, 4 are under the Madhyamik Board (state) and 9 are under the New Delhi based ICSE Council. The medium of instruction in the State Board School's are English in 1 school, Nepali in 2 schools and Bengali in 1 school.

There is only one higher secondary school under the New Delhi based ISC Council and the rest, i.e. four schools are under the West Bengal Higher Secondary Council. The medium of instruction in three Higher Secondary Council's schools is English and in one school Nepali. One important point to note here is that one of the West Bengal Council's school (Holy Cross Institute) imparts education only to the students of classes XI and XII.

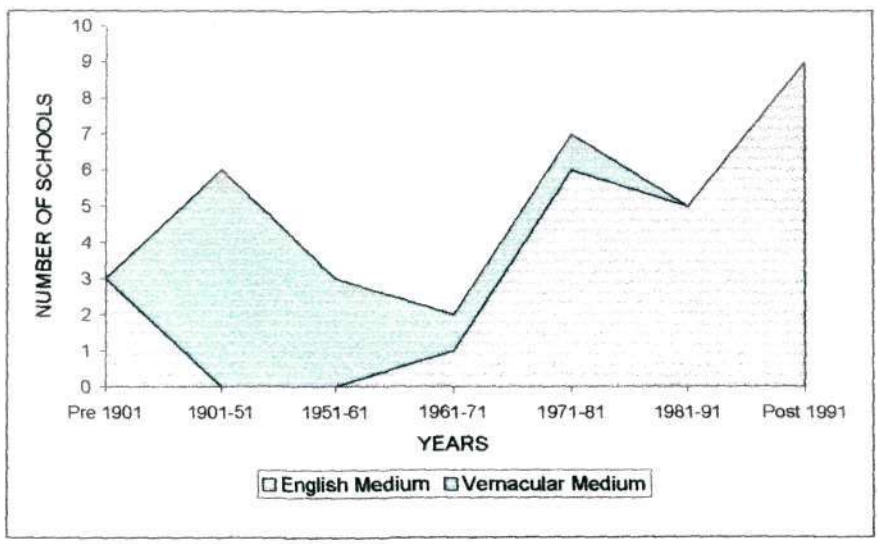


Fig. 4.4 : Growth of Schools.

The English medium residential schools in Kurseong can be divided into two distinct groups – schools of pre-1970 and schools of post-1970 period. The reason behind dividing the schools as such is that in the pre-1970 period the schools in the town were set up either by the

government or by the missionaries but in the post-1970 period private entrepreneurs set up all the schools. The first school in post-1970 period was started in 1971 and with the passing of time more entrepreneurs joined the fray. The schools were initially started with a few students by the private entrepreneurs on their private or rented buildings and later on in few cases new buildings were added to accommodate the growing number of students. The demand for good education and that also in English medium has led to the growth of these schools (24) in the post-1970 period (Fig. 4.4). The trend shows that there had been an addition of a school in each year with the exception of the period between 1986 and 1988, when the whole of the Darjiling Himalayas was swayed away by an agitation for a separate state.

A survey was carried out in 34 schools (32 within the Municipal boundary and 2 outside the Municipal boundary) to know about the composition of the schools (Appendix). The total number of students studying in these schools is 12,502 and the percentage of boys studying is 54.7 and that of girls is 45.3. The number of day scholars (9,239) is high whereas the number of boarders studying is only 3,263 (Fig. 4.5).

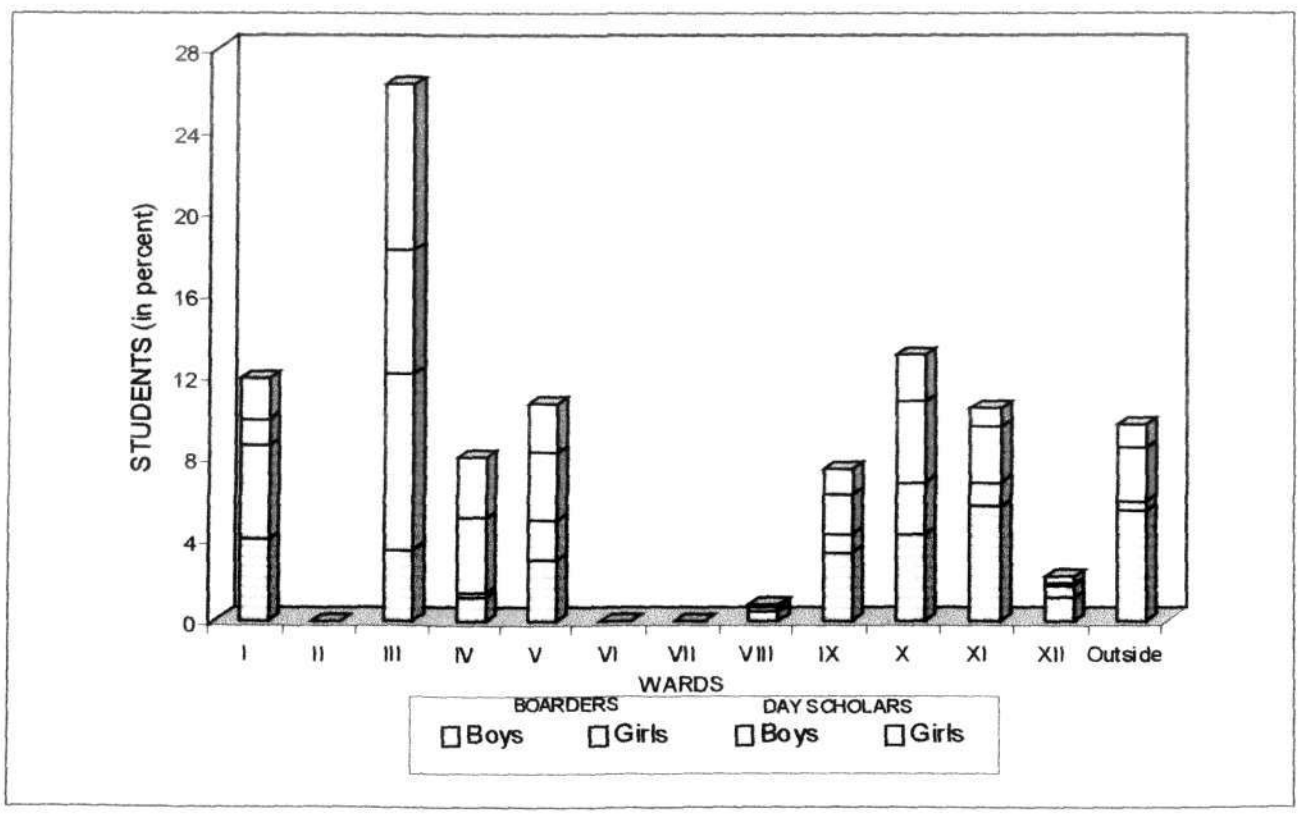


Fig. 4.5: Categories of Students.

Out of the 34 schools surveyed, 10 schools fall under the category of day schools whereas 24 are residential schools. Even though the number of day schools is less in comparison to the residential schools, the student's strength is more in the day schools than in the residential schools. The total number of students studying in the day schools is 6,412. Most of the students studying in the day schools are from the municipality and its neighbourhood, which includes the tea gardens, villages, and places like Mahanadi, Tung etc. situated along the Hill Cart Road. The students coming from the settlements situated along the Hill Cart Road take advantage of transport facilities like buses and trucks but the students coming from settlements not connected by motor able roads sometimes have to walk for an hour to reach their schools. Most of the students those who come from the tea garden settlements and villages walk an average distance of 3-6 km to reach their respective schools.

The 24 residential schools, which imparts education through English medium and the total strength of students is 6,090. Some of these schools are very small in size and the total strength of students in the case of 4 schools is less than 50. There is only one school in this group where the students strength 1,030. The percentage of boarders (53 percent) is more than the day scholars in this group but there are exceptions in few schools where the number of day scholars is more than the boarders in spite of the fact that the schools classify themselves as residential schools. The number of boys (57 percent) studying in these schools is more than the girls. There are two schools entirely for the boys and two for the girls and rest of the schools are co-educational. Among the day scholars and boarders the number of boys is more than the number of girls.

The students studying in these schools are not only from the local area but they also come from the neighbouring districts, states and countries (Fig. 4.6). The number of students those who are from the town itself is 2,803 but this figure is somewhat misleading because even though they are studying in their respective schools as day scholars, few of them do not reside permanently in the town. These students, because of not getting a place in their respective school's hostel, are staying in private hostels, which are cropping up like mushrooms in the town or are staying as paying guests. These private hostels, big or small, accommodate a good number of students and have turned out to be a profitable business in the town. Anyone who has a room to spare are utilising it as a place to accommodate students in

search of a shelter. And because of this particular reason it was not possible to extract the exact figure from the school authorities regarding the number of students coming from other places.

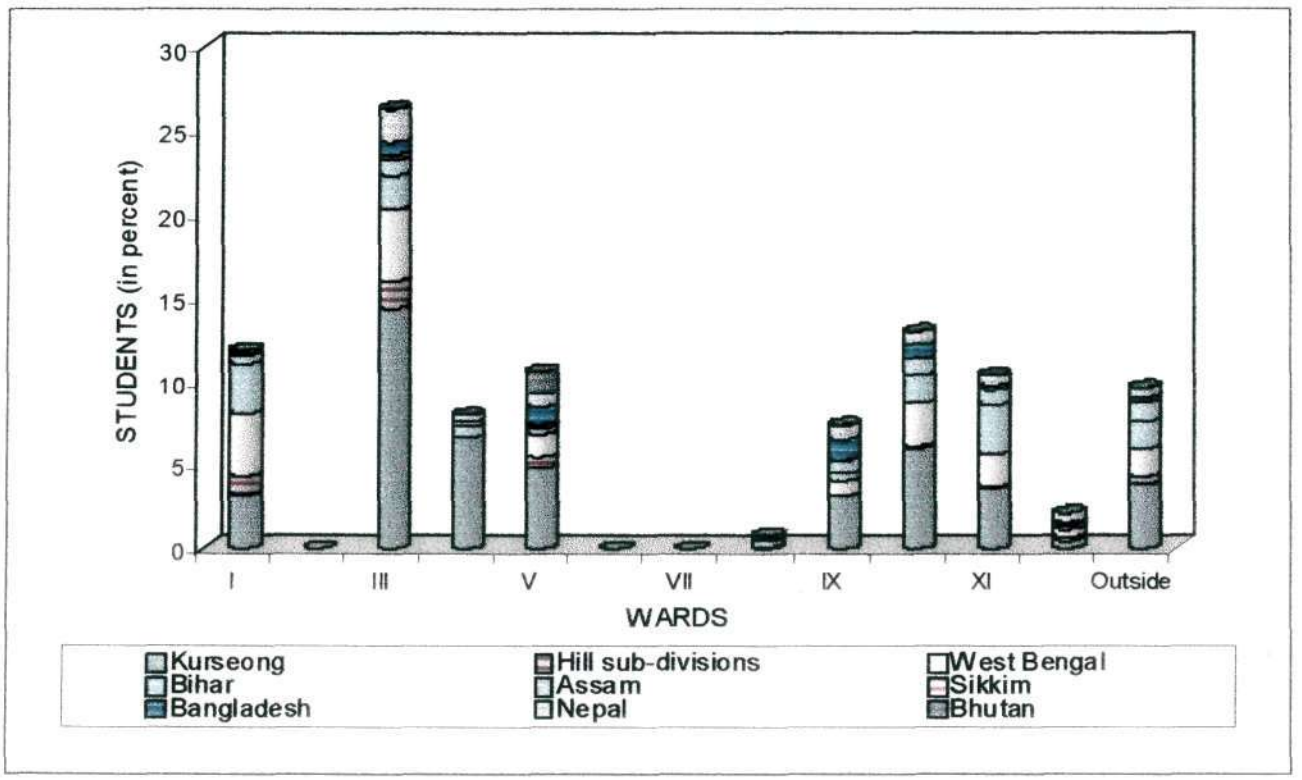


Fig. 4.6: Status of Students coming from different places.

The number of students coming from the state of West Bengal, excluding the three hill sub-divisions of the Darjiling district is 1,031 and it accounts for 16.9 percent of the total number of boarders. Most of the students from West Bengal are coming from the districts of Uttar Dinajpur, Dakshin Dinajpur, Maldah, Murshidabad, Barddhaman and Calcutta and its suburbs. The next state in importance is Bihar and the number of students coming from this state is increasing every year. It accounts for 13.3 percent of the total number of boarders and most of the students came from the districts in the eastern and northern part of Bihar. Assam is the next state from where about 5.9 percent of the total students come to these schools. The number of students from Sikkim is negligible and accounts for only 0.4 percent of the total.

The number of students coming from the neighbouring countries account for 24.46 percent of the total number of boarders. The number of students coming from Nepal, even though it accounts for 6.8 percent of the total number of students or 12.75 percent of the total

number of boarders, is declining and one of the reasons attributed to this decline by the authorities is that a number of schools have been started in eastern Nepal, which has resulted in the decline in the number of students coming to the district. The number of students coming from Bangladesh to Kurseong is increasing. There is one particular school where their number accounts for about 41 percent of the total strength of the school. The students coming from Bhutan account for only 1.5 percent of the total students. About 90 percent of the students coming from Bhutan are studying in a particular school because of being the only ISC School in Kurseong.

There are many factors, which have helped in setting up of English medium residential schools in Kurseong in the private sector. The most important factors are –

(a) demand for education through English medium;

(b) growth of a neo-rich class; and

(c) a hill station near Siliguri.

Unlike in the olden days, the demand for education through English medium is increasing now a day among a section of parents. This section doesn't want their wards to study in a government or government sponsored school where teaching is done through the mother tongue. There are many in this section who are first generation literate or their wards are going to be the first generation literate. Occupation-wise most of the students come from business families. It has been observed that there has been a growth of an affluent class in the villages, towns and cities in the last two decades who can afford to spend money on the upbringing of their wards, which they couldn't get during their time.

The third factor is also very important. The lure for schooling in a hill station was always present and Kurseong's nearness to Siliguri has helped in the growth of these schools. As it takes only one hour to travel from Siliguri to Kurseong via the Pankhabari Road, parents coming from different places in the plains prefer this hill-station to other hill stations in the Darjiling Himalayas.

The schools, especially the opening up of new English medium schools in the private sector, have helped in the generation of employment opportunities. The combined staff

strength is 1,053 and most of them are from the town or are from the neighbouring areas. In the non-residential schools category the total teaching staff strength is about 200 and the male teaching staff accounts for 58 percent of the total teaching staff (Fig. 4.7). About 86 percent of the teachers are from the town, 12 percent are from neighbouring places like Darjiling, Tindharia and Siliguri, and only 4 teachers are from the other districts of West Bengal.

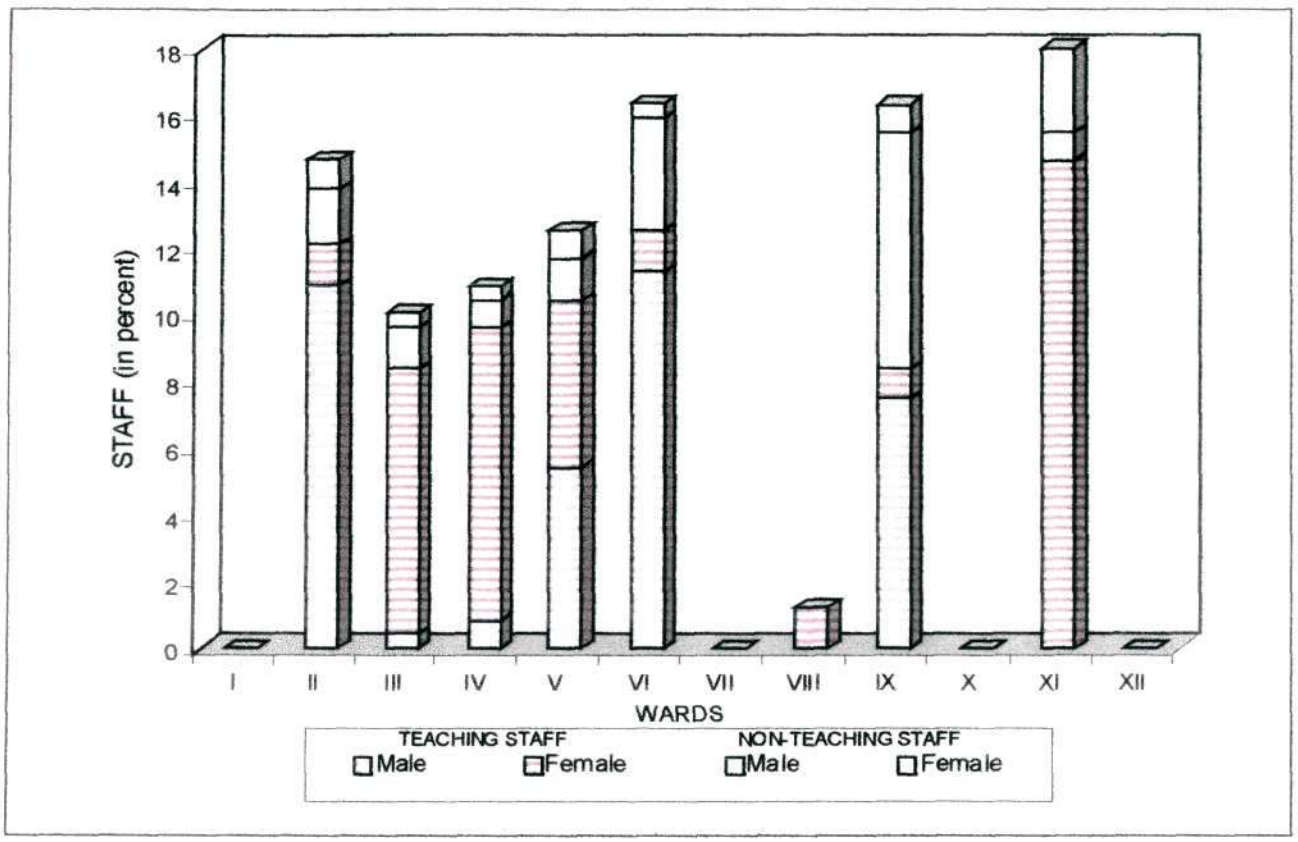


Fig. 4.7: Categories of Staff in Vernacular Schools.

In the residential schools category the total staff strength is 853 of which the total number of teaching staff is 445 and non-teaching staff 408 (Fig. 4.8). The female teaching staff accounts for 66.5 percent of the teaching staff but in the non-teaching staff category male staff accounts for 60 percent of the total. Fig. 4.9 shows the educational status of the teaching staff in the English and Vernacular medium schools in the town. Number of post-graduate teachers is more in the government and government aided schools where as in the private schools the number of graduate and under-graduate teachers is more than the post-graduate teachers. About 63 percent of the teachers are from the town and 5 percent of the teachers are from the other parts of the district (Fig. 4.10). The teachers coming from other parts of West

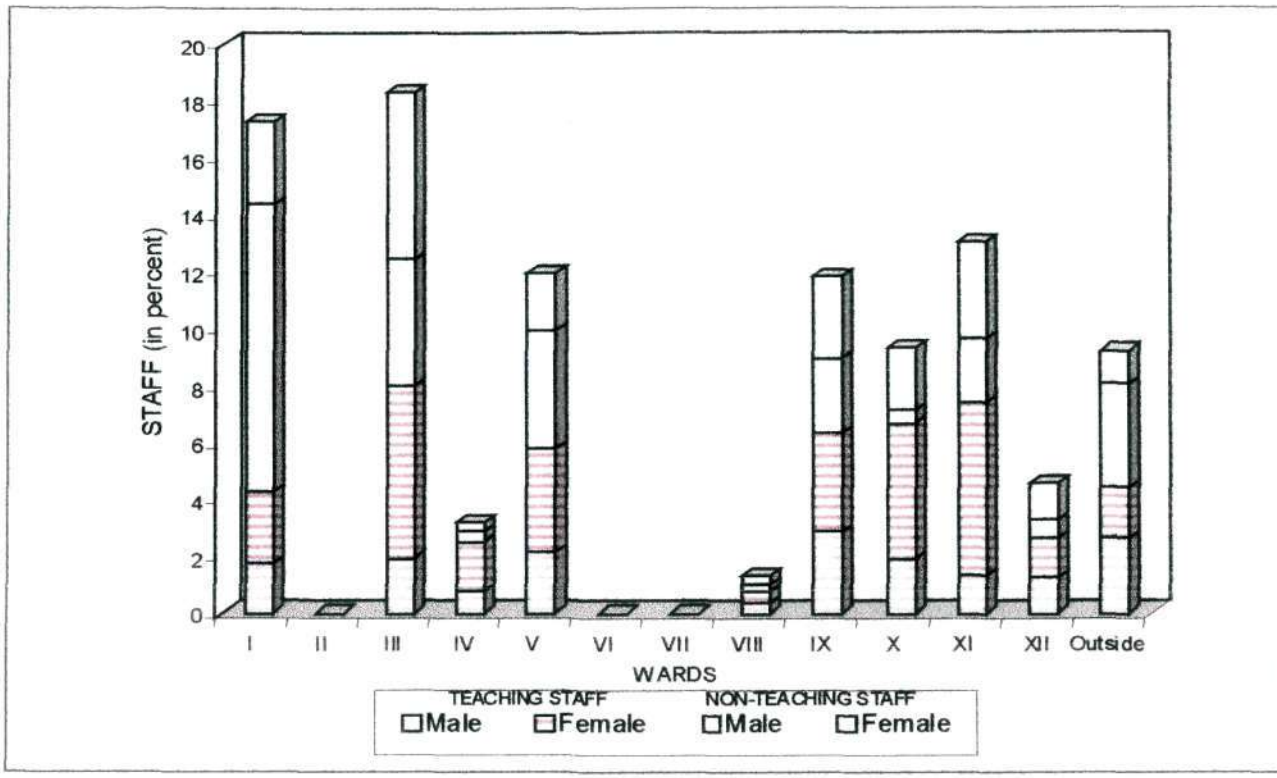


Fig. 4.8: Categories of Staff in English Medium Schools.

Bengal account for 26 percent of the total and there are 15 teachers from Kerala, 7 from Bihar and 1 from Bhutan.

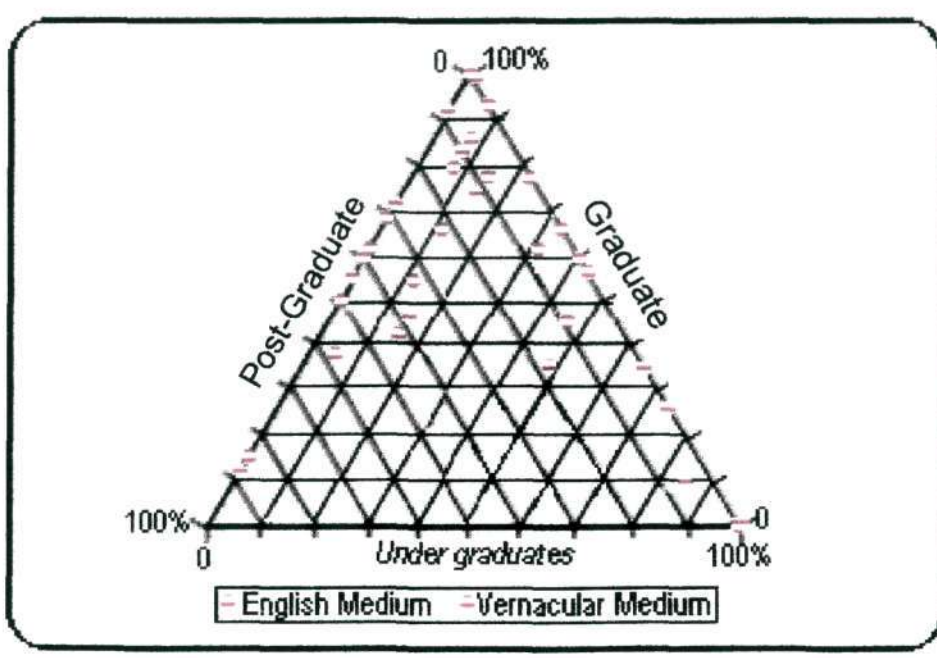


Fig. 4.9 : Educational status of the teaching staff in different schools in Kurseong town.

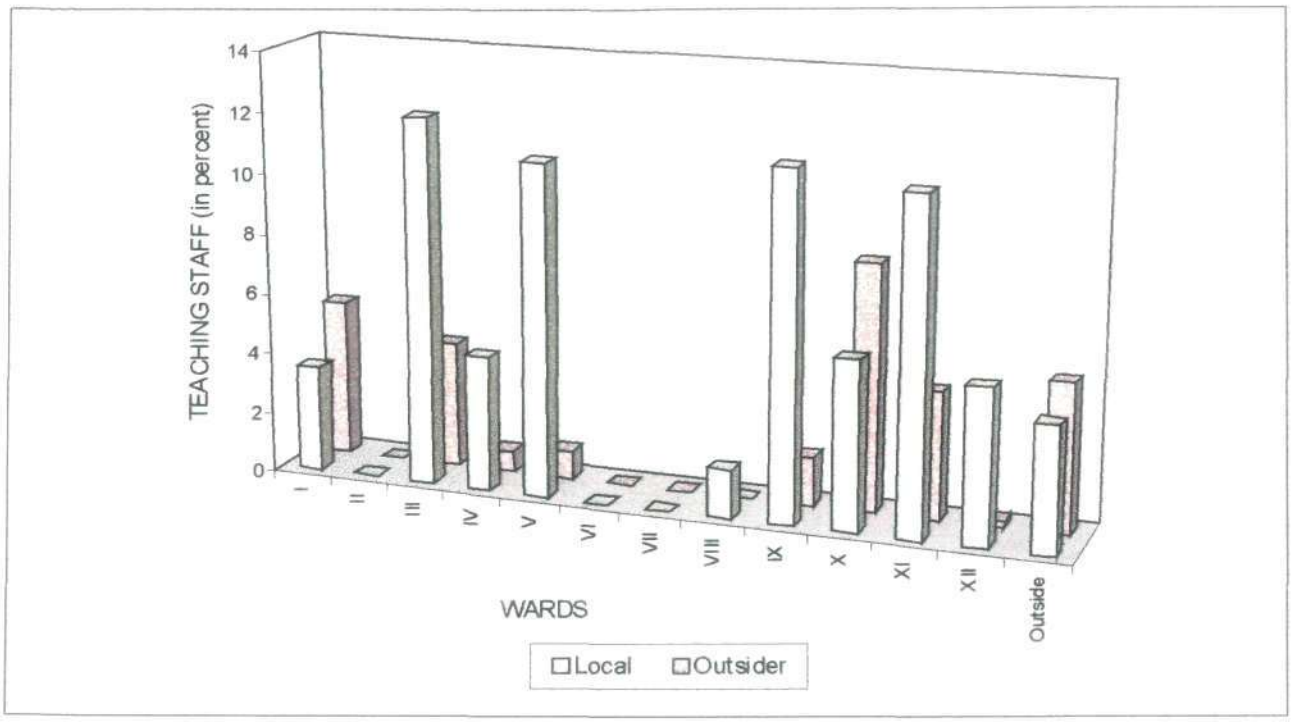
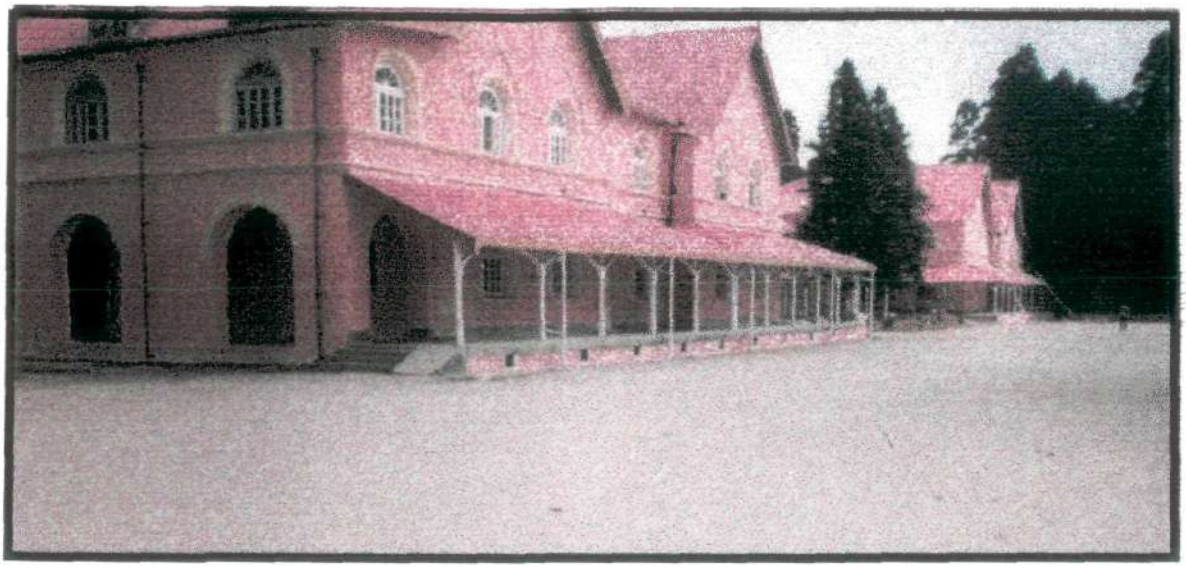


Fig.4.10: Place of origin of teaching staff in English medium schools.

All the residential schools of the post-1970 period category have certain disadvantages. The most important are lack of playgrounds and scarcity of water especially during the lean months. The four schools, which were set up before 1970, have spacious compounds with large playgrounds (Pic. 5), spacious classrooms and dormitories (Pic 6) and have their own

Pic. 5 : Playground of a pre-1970 period English medium residential school.



Pic. 6 : School building of a pre-1970 period English residential medium school.

source of water. But the schools of the post-1970 period are lacking in these facilities. Most of these schools are primary schools and do not have proper playgrounds (Pic. 7) and the charm of childhood is lost within the four walls of the classroom or caged enclosures of the school compound. The classrooms are small in size and the dormitories in some cases have tier system to accommodate the boarders. The shortage of water is evident in all these schools and they have their own method of bringing water, usually in plastic water tanks, from the jhoras and spend a substantial amount of money for carrying water especially during lean months.

Pic. 7 : Playground of a privately-run English medium residential school.

The day schools also do not have proper playground of their own and this problem of shortage of playground is going to remain in Kurseong town due to the nature of the terrain.

Other than the presence of these schools, Kurseong town also has a degree and a polytechnic college. The degree college suffers from the problem of scarcity of permanent teachers and has to carry on its classes with part-time teachers. The polytechnic college is located in a spacious campus and provides courses in civil, electrical and mechanical engineering streams. Students are admitted to this college on the basis of marks received in class X's examination although in the rest of the polytechnic colleges in the state students are admitted after getting qualified in a competitive examination.

Outside the municipal boundary of the town, there are two training institutions of the forest department, one is located at Dow Hill and the other is located at St. Marys. The West Bengal Forest School now called the Forest Training (North) at Dow Hill was established to impart practical forestry education to sub-ordinate field cadres of the Department of Forest, namely, Foresters and Deputy Rangers. The course is of 10 months. The training institute at St. Marys (Eastern Forest Rangers' College) gives in-service training to students for the post of Range Officers of the Department of Forest. The course is of two years. Both of these institutes are located on spacious campuses. As the number of trainees coming to these institutes are decreasing the infrastructure of the se institutes remain under utilised and the Government of West Bengal is thinking of closing down the Rangers' College due to lack of students.

4.2 MEDICAL FACILITIES

There are two hospitals in the town *viz.* the Kurseong Sub-Divisional Hospital and the S.B. Dey TB Sanatorium. Other than these two hospitals there are dispensaries maintained by the Railway, the tea gardens and the residential schools.

4.2.1 Sub-divisional Hospital

The account of O'Malley (1907) shows that there was a charitable dispensary at Kurseong where 4,000 patients were treated in 1905. A plan was made to erect a hospital and dispensary containing a European ward in a central position in the *bazaar* to meet the growing demand for better medical facilities. After the completion of the hospital the Municipality

maintained it and in June 1944 it was taken over by the Government. Dash's (1954) account shows that the hospital had 41 beds – 28 for males and 13 for females. There were two rooms in a separate ward for paying patients and a separate phthisis ward with 4 beds each for males and females. The Chief Medical Officer, Kurseong, was the Superintendent and a Sub-Assistant Surgeon worked under him. The total number of patients dealt by the hospital during 1942 was – indoor-730 and outdoor-10, 075.

The hospital, now called the Kurseong Sub-Divisional Hospital, has 100 beds at present. It provides both outdoor and indoor facilities to the patients. Regular treatment of patients in all the major disciplines is done and advice and medicines are offered to all patients attending the Out Patient Department (OPD). There is a separate clinic for treating tuberculosis. Laboratory facilities along with radiology facilities are provided to the OPD patients at a nominal cost.

Patients needing admission in any discipline are admitted either from the OPD or from patients admitted during emergency hours. Biochemical and pathological tests are conducted on a daily basis on patients needing such tests at nominal rates. All major biochemical parameters *viz.* sugar, urea, creatinine, widal test, bilirubin, linear profile etc. are done. X-rays and contrast X-rays are done on patients needing such. ECG facility is also available for needy patients.

Operation facilities are available for surgery and gynaecology patients. There is a labour room with separate resuscitation facilities for newborn babies. A new blood bank has been opened up which caters to the need of patients needing urgent blood transfusion. The blood bank also stores blood of different groups and tests blood for Hepatitis and HIV. Ambulance facility is provided by the hospital for transporting patients at a nominal rate. There is a morgue adjacent to the hospital where post-mortem is done.

In the sub-divisional hospital the number of doctors are 17 and the number of technical staff including the nurses are 74. The total number of indoor patients treated during Mar'98-Feb'99 was 6,104 and the total number of patients in the OPD during the said period was 56,824. The number of beds available in different discipline is Medicine – 37, Surgery – 30, Paediatrics – 12, Maternity –8, Gynaecology – 10, and paying cabins – 3.

4.2.2 S.B. Dey T.B. Sanatorium

The Calcutta Medical Aid and Research Society of Jadavpur set up the Sanatorium in 1936. This was possible due to the philanthropy of late Rai Bahadur S.B. Dey. The hospital opened with a two-storied building having twenty beds. In 1942, accommodation was increased to 44 beds and an out door clinic was opened. In 1942-43, the institution received a gift from the Governor of Bengal of 8.094 ha of adjoining forestland after deforestation. Till Independence the number of beds provided by the hospital was only 61.

A three-storied hospital building was completed in 1951 and in 1960 the North East and North Frontier Railway built the Railway Annexe. The tuberculosis ward with 28 beds of the Kurseong Sub-Divisional Hospital was transferred to the Sanatorium in 1963. With the untiring efforts of late Dr. B.C. Roy (ex-Chief Minister of West Bengal) and late Dr. K.S. Roy the number of beds was increased to 349. In 1975, the North East Railway, the department of Post and Telegraph and Tea Board withdrew their reserved beds and the number came down to 299. On 2nd October 1979, the Sanatorium was taken over by the Government of West Bengal from the management of the Calcutta Medical Aid and Research Society. The Sanatorium was given the status of a State Hospital and the number of staff – both technical and non-technical, was increased. The present strength of staff stands at 180, of which six are doctors. In August 1995, a devastating fire destroyed the office and an incinerator of the hospital. Hospital wastes are now either dumped in an open garbage pit or thrown into the drains or in a nearby jhora. Due to a change in the pattern of treating patients suffering from tuberculosis and the establishment of Primary Health Centres at Block Level the number of patients reporting to this State Hospital has decreased tremendously.

4.2.3 Other Medical Facilities

The Darjiling Himalayan Railway maintains a dispensary for treatment of its staff at Kurseong. Patients suffering from serious problems are either referred to the Railway Hospital at Tindharia or at New Jalpaiguri. The dispensary is under the supervision of one medical officer and 12 other staff.

There is one modified leprosy control unit at Kurseong under the supervision of the Sub-divisional Medical Officer. The staffs under this unit are mainly field staff and are

stationed at designated villages. They help in dissemination of information on leprosy to the villagers and guide the patients afflicted with the disease.

4.3 TRADES AND COMMERCE

Even where trades and commerce are not responsible for the origin of an urban area, they play an important role in the development of urban life and activity. Development of trades and commerce is necessary to meet the demand of the local and surrounding rural population. Trades and commerce usually grow – (a) at the junction of transport network, which helps in quick marketing of perishable agricultural products; and (b) at the place, which determines a very high density of population resulting in high aggregate demand of goods of various kinds. A small town has less number of business outlets and the central business district is located close to the geographic and population centres.

The status of shopping centres depends on density of population per sq. km, economic conditions of the people of that area, location and accessibility to the customers. The structure of shopping centre changes with the size of residential area and demand of goods. The shopping centres are usually linear in pattern unless there is a departmental store or shopping complex. The arrangement begins to get disturbed as the number of stores and shops increases. The ideal arrangement is one where the shoppers can make use of transport facility. Thereafter, the shops begin to cluster in a place so that the user can walk minimum distance to get their desired goods. As a result many shops dealing with similar goods are concentrated in a particular place or side-by-side so that the customer can compare and select the best one at competitive prices (Jana, 1978).

Most of the shops in Kurseong town are located in the central part of the town along the Hill Cart Road and at the junction of Acharya Bhanu Path with Hill Cart Road. The business activities are mainly concentrated in wards VI and VII and small part of wards VIII, IX and X, which are situated near them (Fig. 4.11). The *hat bazaar* in ward VI has been in existence for very long time and was owned by the Raja of Burdwan. The *bazaar* mainly catered to the needs of the local inhabitants and the workers of the neighbouring tea gardens. In the last century few hotels came up along Pankhabari Road and Hill Cart Road for the tourists, mainly those who were travelling to Darjiling. Few shops came up which dealt with groceries, coal and items needed for tea gardens.

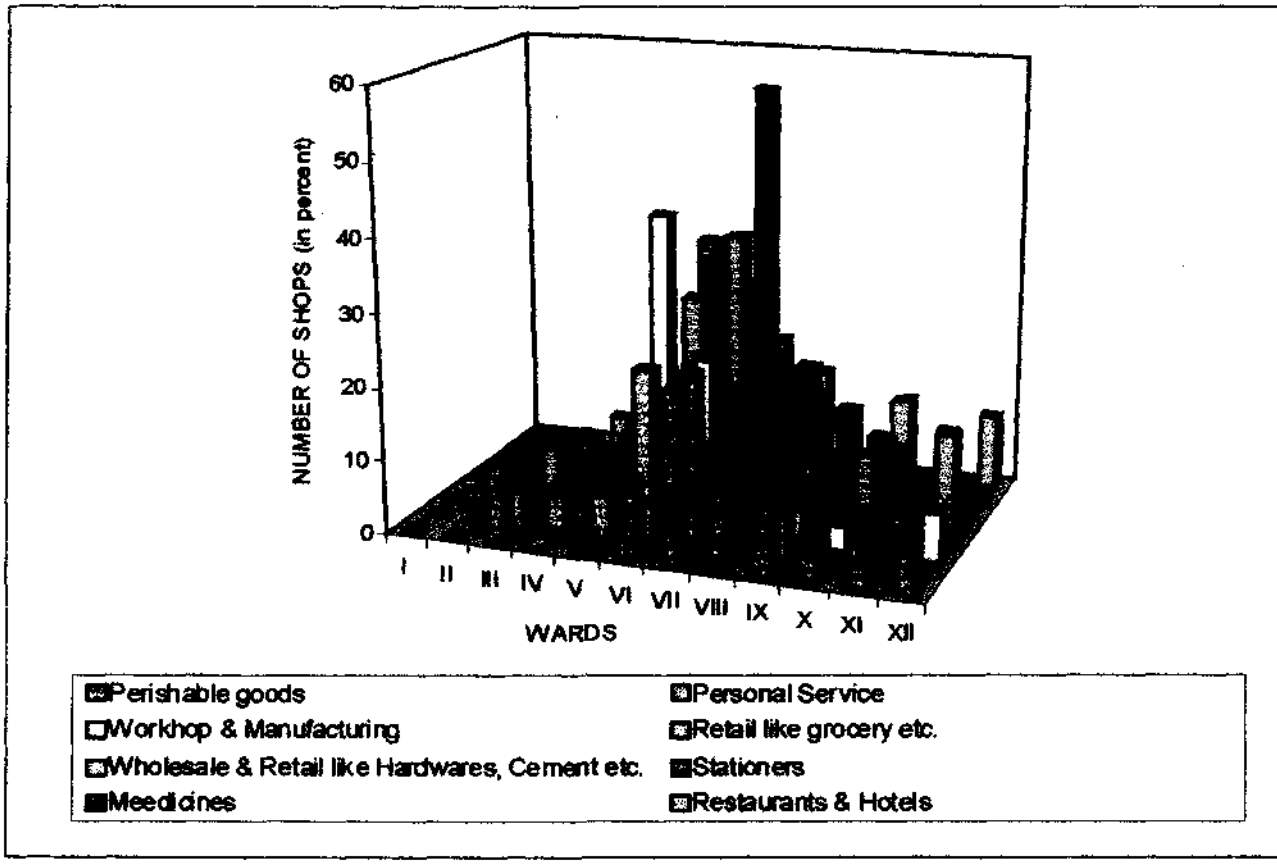


Fig. 4.11: Categories of shops in different wards.

There are at present 879 shops dealing with different types of goods in the town of which wards VI and VII accounts for about 52 percent of the total number of shops. Another 24.5 percent of the shops are located in wards VIII, IX and X that make a part of the central business district. Table 4.1 shows the number of shops by functional types in different wards of Kurseong town.

Grocery and betel leaves shops account for about 27 percent of the total number of shops followed by stationers' (20 percent) shops and hardware (15.13 percent) shops. Actually, in Kurseong town the shops cannot be compartmentalised into wholesale and retail because many of the shops play the dual role of wholesalers as well as retailers. Most of the goods, which are sold in the market like vegetables, fish, provisions, hardware's, cement, coal etc. are, imported from Siliguri. Some goods are imported directly from Calcutta, Delhi and some other places of the country. The wholesale business mainly caters to neighbouring villages and tea garden settlements. Kurseong town used to play an important role in wholesale business for a large section of the hill population even a couple of decades ago but

due to the improvement in transport facility with Siliguri the dependence on Kurseong town has declined over the years.

Table 4.1 : Categories of shops in Kurseong town.

Categories of shops	Number of shops	Percentage of the total shops
Perishable goods like vegetable, meat, fish	48	5.46
Personal services like barber saloon, beauty parlour, photo studios, laundry	17	1.93
Workshops and manufacturing like bakery, jewellery, tailoring, motor repairs, press	150	17.07
Wholesale and retail like grocery and betel leaves	239	27.19
Wholesalers and retailers like hardware, cement, coals	133	15.13
Stationers like footwear, cloth and stationeries	176	20.02
Medical stores	18	2.05
Hotels and restaurants	98	11.15
Total	879	100.00

During the last decade, Kurseong has experienced an increase in the number of shops in all categories due to the increase in population not only within the town but also in the periphery. The increase in the number of residential schools has helped in the increase in the volume of trade in the town. Even though most of the shops have remained concentrated in the central part of the town, a few shops dealing with vegetables and stationers and hotels have come up in other parts of the town.

There are ten medium sized hotels in the town situated along the Hill Cart Road. The business of these hotels depends mainly on the schools. As tourists' flow to this town is negligible, the occupancy rate of these hotels is depended on parents or guardians of residential schools, who come to the town either to give or take their wards or to meet their

wards in the schools. As these stays are of short duration and during a particular period of the year, the number of people occupying the hotels fluctuates.

A field survey of the commercial area of the town reveals that individuals or their families own the shops selling perishable goods and these goods are either procured from Siliguri or from wholesalers within the town. The other category of shops are also owned by individuals or families but the scope of employment exist in those shops and shops dealing with jewellery, grocery, cloth, hardware's, stationers, medicine etc. employ workers, mostly in the range of one to four, depending on volume of transaction in the shops.

4.3.1 Finance

The economic development of any town is closely linked with the banking activity carried on within it and is an important index of economic development. In this town, there are 4 scheduled banks (3 nationalised and 1 non-nationalised). Altogether 87 employees are working in these banks. Among the banks in the town State Bank of India (S.B.I.) ranks first in view of its customers and employees (57) followed by Central Bank of India with 16 employees (Table 4.2). The non-nationalised bank is the Darjeeling District Co-operative Bank. Two banks (Central Bank of India and Allahabad bank) are located in the CBD where as the other 2 banks (State Bank of India and Darjiling District Co-operative Bank) are located near it. The State Bank of India is the main bank in the Kurseong Sub-division. At present the S.B.I. has about 22,000 account holders including pension account holders.

Table 4.2 : Banks in Kurseong town.

Name of the banks	Location	Number of employees		
		Male	Female	Total
State of India	XI	53	4	57
Central Bank of India	VII	14	2	16
Allahabad Bank	VI	8	1	9
Darjiling District Co-operative Bank	IV	5	-	5

4.4 TRANSPORTS AND COMMUNICATION

Few forces have been more influential in modifying the earth than transportation, yet transportation itself is a result of other forces. Economist and others have recognised through the ages that, in general, trade and improvements in transportation to facilitate it raise the standard of living of all parties concerned, although not necessarily equally. Interaction in the modern world has been enormously increased by improvements in transportation. Improvement in transportation and circulation has produced two contrasting and contradictory results: (i) in many cases it has made the world and its people more alike, since they are enabled to share ideas, products, and services; (ii) simultaneously, in many cases it has made areas more unlike, since each region has been enabled to specialise in activities it can do best, whether based on factors of production related to land, labour, capital, or simply economies of scale (Ullman, 1956).

The functional efficiency of any urban centre is influenced to a great extent by movement space and circulation pattern as it provides to the users. Without sufficient move[illegible] space, transportation system cannot work efficiently. Again, the circulation pattern is intimately related to transportation. Trip length, trip frequency, movement efficiency in terms of speed, safety and convenience of movement etc. are closely dependent on circulation system. So the study of circulation pattern is necessary that help in the identification of various traffic problems. Traffic problems need intensive attention and their solution will provide improvement and development of the town. A glance at the transportation system of the town shows that road transport is important on account of direct linkages with other urban centres as well as for its time-distance factor and frequency.

The traditional modes of conveyance in the Darjiling hills were the hardy porters and mules. In the autumn of 1848, Hooker trekked the Darjiling and Nepal Himalayas on foot, and everything was carried on men's back. By the end of the nineteenth century modes of conveyance had improved a little bit. In O'Malley's words "strong bullock carts equal to very rough work ply along the few roads where the gradient is not too severe for wheeled traffic, but these roads are few in number, and the majority are paths too narrow and steep for any carts. Pack-ponies or human carriers are consequently most generally used for transport. The coolies are capable of great feats of endurance. It is not uncommon for a tea garden cooly to

carry a tea chest weighing 110 to 130 lbs (49.9-59 kg) for a distance of 5 or 6 miles (8.05 or 9.66 km) up an ascent of 2,500 to 3,500 feet (762–1,067 m); ..... In Darjiling itself the commonest conveyances for those who do not ride are the luxurious rickshaw and the hill dandy". The laying of railway line between Siliguri and Darjiling improved the mode of transportation in the hill but a major change took place only when the management of Grand Hotel, Calcutta introduced a passenger-automobile service between Siliguri and Darjiling after World War I. It cut short the train journey by 3 ½ hours.

4.4.1 Railways

Based on the belief that a train line could substantially reduce the cost of bullock cart transport between the plains and Darjiling and still earn a good profit, Franklin Prestage, an agent of the Eastern Bengal Railway (EBR), in 1878 submitted a detailed scheme for laying a railway line between Siliguri and Darjiling to the Government of Bengal. An agreement was signed on April 8, 1879 between the Secretary of State and Franklin Prestage for the execution of the work. Prestage settled for a 0.6096 m (2 ft) rail gauge and formed the Darjiling Steam Tramway Company. The agreement gave a number of concessions to the company *viz.* the government land and the right to use the existing cart road was granted free of cost and other land necessary was acquired by the Government and transferred to the Company at cost price. On September 15, 1881, title of the company was changed to Darjiling Himalayan Railway (DHR) Company. Kurseong was selected as the headquarters of the Darjiling Himalayan Railway Company. The progress of construction of Darjiling Himalayan Railway line was remarkable as could be seen from Table 4.3. Midway between the *bazaar* and the St. Helen's Convent in Kurseong, sites were acquired by the Company for the construction of residential quarters for its officers and staff. Construction of the present railway station was completed on June 24, 1885. There is an interesting account by Dozey regarding the location of railway offices in Kurseong: " Had the project which Major Lindsay, R.E., the Manager of the Eastern Bengal Railway, had in mind, when the Darjiling Himalayan Railway was in the process of development materialised the combined Eastern Bengal and Darjiling Himalayan Railway offices would have been located in the buildings at present in occupation by the Dow Hill Girls' School. These quarters were soon found inadequate and then the authorities of the former line hide off to Saidpur from where there was a further exodus to Calcutta. How business could have been conducted right up in the clouds is beyond ordinary mortals even to

conjecture .... Fortunately someone with a modicum of common sense over-ruled this quixotic scheme at the eleventh hour, and so we have offices within the reach of the public at Sealdah and Kurseong, respectively ".

Table 4.3: Progress of construction of railway line of Darjiling Himalayan Railway.

Main line	Date of opening	Distance (in km)
Siliguri to Kurseong	23.08.1880	51.096
Kurseong to Sonada	01.02.1881	16.093
Sonada to Jore Bunglow	05.04.1881	9.656
Jore Bunglow to Darjiling	04.07.1881	4.828
Darjiling to Darjiling Bazar	16.06.1886	0.402
Total Distance (in km)		82.076

O'Malley wrote in 1907: " The railway (D.H.R.) cannot compare for speed, comfort and cheapness with mountain railways in other parts of the world, though it was no doubt a creditable achievement in the days when it was built. It must be remembered that the construction of mountain railways was more or less of an innovation in India at that time and cheapness of construction and the safety of the line were matters of the first consideration. Great credit is due to the railway staff for the continued safety of the line, which is liable to be breached by torrents and landslips. The portion of the line passing by the water course known as Pagla Jhora or the 'mad torrent' is a typical example of the difficulties which have to be encountered in maintaining the stability of line and in keeping up through traffic". Long stretches of the line were completely destroyed by stupendous landslips caused by the cyclone in September 1899. O' Malley further writes that " the difficulty and costliness of keeping the line in repair is one of the causes of high rates prevailing on the railway; but this is the only cause, and the absence of competition is the chief reason why the railway is so expensive. The dividends paid are extraordinarily good, and the result is that, though the railway has been largely instrumental in developing the resources of the district, it may reasonably be contended that the high rates charged for transport have to some extent hindered its further growth".

The monopoly of the railways was reduced to a great extent by the introduction of passenger-automobile after 1920. But even then it played an important role in transporting goods and people, tourists in particular. In 1942-43, the total number of passengers those who travelled to and from Kurseong were 44,910 and 54,069 respectively (Dash, 1954). It is interesting to note that the Darjiling Himalayan Railway never needed Government's financial support, and was a profiteering venture till its nationalisation on October 20, 1948. In pursuance of the Union Government's policy to re-group the Indian Railways into zone system for imparting greater efficiency and economy in their operations, the Darjiling Himalayan Railway was merged with the North East Frontier Railway with its headquarter at Maligaon in Assam.

Pic. 8 : The *Toy Train* passing through Kurseong town.

Keen rail-road competition has placed the Darjiling Himalayan Railway at a disadvantage as because road transport is comparatively cheaper and quicker. The number of passengers travelling in the *Toy Train* (Pic. 8) has dwindled over the years as can be seen from the following figures (Table 4.4). At present the Darjiling Himalayan Railway runs only one set of train between Siliguri and Darjiling and one set between Kurseong and Siliguri. Goods transportation was totally stopped in 1992 by the Railway Authority.

Table 4.4 : Passengers travelled during different years from Kurseong.

Year	Passengers travelled from Kurseong
1983-84	22,400
1996-97	14, 790
1998-99	12,634

Even though the *Toy Train* has lost the competition to road transport in terms of trip frequency and time, it still attracts tourists from within and outside India. Although the Ministry of Railways has taken initiative but it is not sufficient for the proper maintenance of the oldest mountain railway line in India. Recently due to an initiative taken by the Ministry of Railways and associations like the D.H.R.H.F. and the 'Friends of the DHR' to give it a heritage status, the UNESCO set up a technical committee to look into the matter. In December 1999, the UNESCO put the Darjiling Himalayan Railway on its list of World Heritage Sites. It is expected that with this declaration initiatives will be taken to revive the old glory of the *Toy Train*, a recognition that, apart from making available some funds for restoration, would oblige the government to conserve the railway and report every five years to UNESCO on the state of its preservation.

4.4.2 Roads

Influenced by rough topography, street pattern in Kurseong is highly irregular (Fig. 4.12). Two principal roads serve Kurseong Township. Hill Cart Road, a National Highway (NH 55), is the main traffic-way, passing through the centre of the town, extending in the north to Darjiling and in the south to Siliguri. Acharya Bhanu Path (Old Military Road / Pankhabari Road) is the other major traffic-way that extends on the north to Ghoom and on the south to NH 31 at Matigara near Siliguri. This route developed by the earliest explorers, though more direct, is suitable only for small vehicles because of its steep gradients. Entering the town from southwest, Acharya Bhanu Path runs in gentle slope up to the railway station from where it winds up in sharp ascent towards Dow Hill on the northeastern part of the town. This 7-kilometre road stretch is the longest within the town and serves as the most important link road for majority of the institutional and public facilities available in the town.

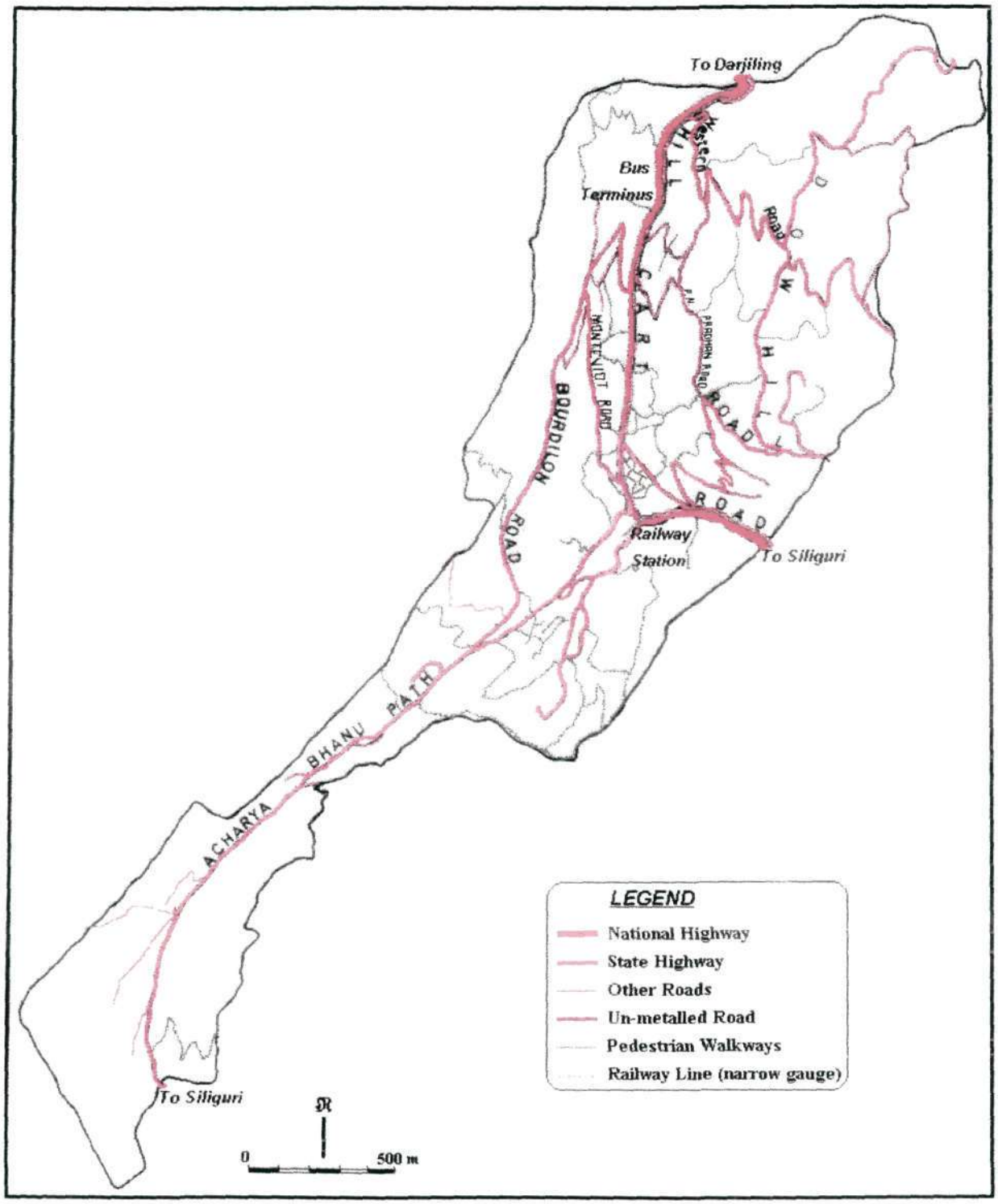


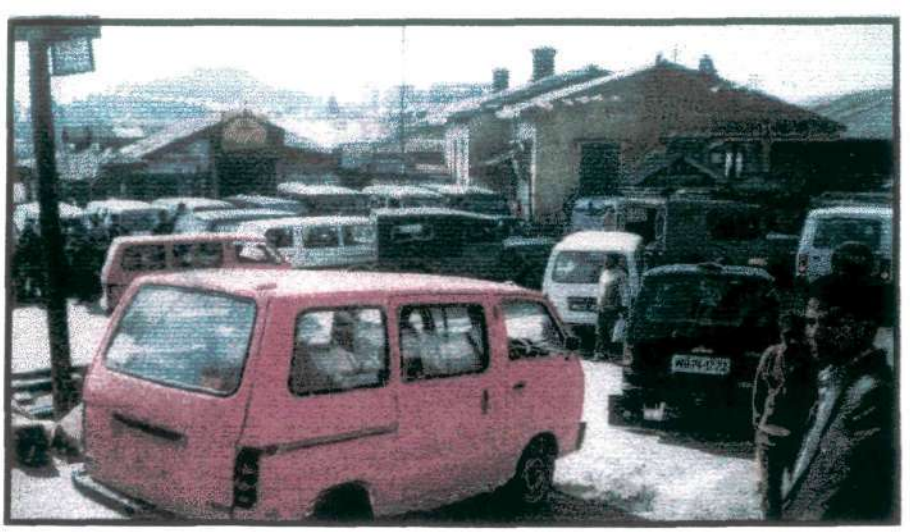
Fig. 4.12: Communication map of Kurseong town.

Burdwan Road serves the very important function of a by-pass to the Hill Cart Road from the P.W.D. office to the railway station. Montiviot Road provides access to one of the most intensive residential area from Hill Cart Road, J.M. Goenka Road provides access to Rajbari area, the oldest residential area of the town and Eagle's Crag Observatory. Bourdillion Road was constructed in 1905 as a north-south connector between Hill Cart Road at the Monteviot end and Acharya Bhanu Path on the south. This road now acts as a bypass for the vehicles coming from Siliguri via the Pankhabari Road. Western approach road, an east-west alternative approach road to Dow Hill starts from the northern end of the town and connects Dow Hill Road at Debisthan. The vehicles do not frequently use this road.

Access roads to residential localities in the eastern and western part of the town are by pedestrian walkways in steep grades or steps. Patterson Road, the most important east-west pedestrian walkway, extends from Burdwan Road to Dow Hill Road. P.N. Pradhan Road, a north-south pedestrian walkway parallel to Hill Cart Road, connects Western Approach Road with Patterson Road.

4.4.3 Traffic flow

As Kurseong town is situated along the Hill Cart Road, it experiences heavy traffic flow of both passenger and goods vehicles. Vehicles not only originate and terminate at Kurseong but the town also experiences the flow of traffic plying between Siliguri and



Pic. 9 : The *Taxi Stand* near the Railway Station.

Darjiling. Buses, jeeps and cars plying between Kurseong and Siliguri and Kurseong and Darjiling originate and terminate at *Stands* near the Railway Station (Pic. 9) even though a terminus, INA Bus Terminus, has been constructed for the vehicles. The jeeps plying between Kurseong and Dilaram-Tung originate at the stand near the new municipal shopping centre, jeeps plying between Kurseong and Mirik, Dudhia and Ambootia start from the stand near the State Bank of India. The intra-town traffic movement is seen only between the town centre and Dow Hill and the vehicles originate from the stand at Burdwan Road.

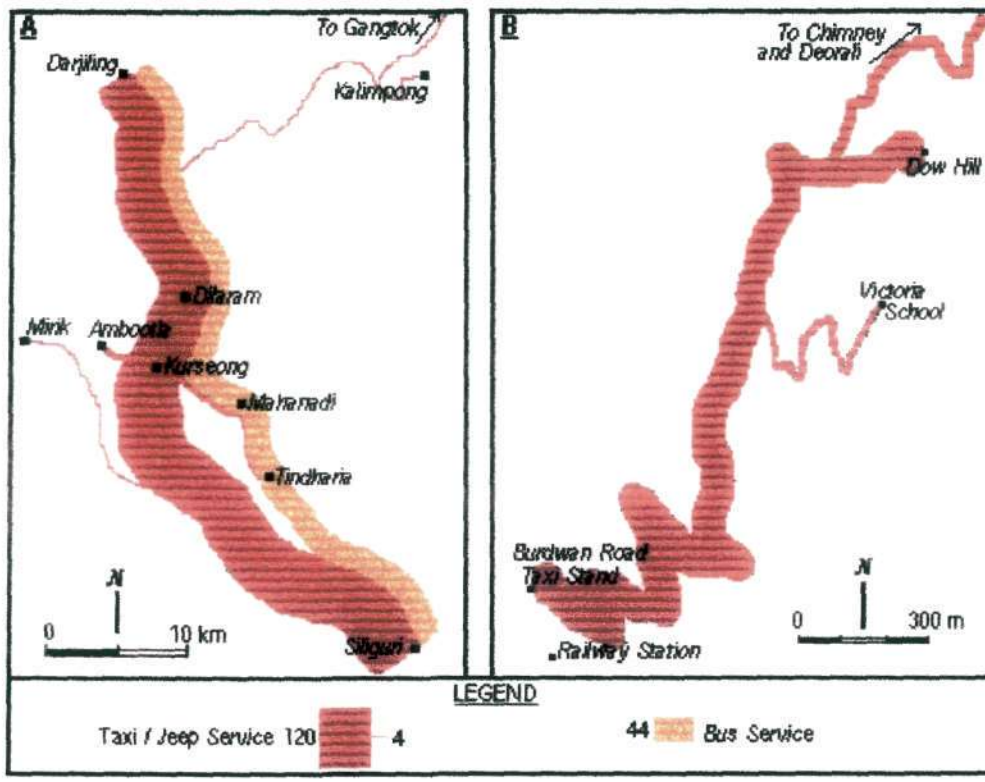


Fig.4.13: Traffic flow chart – A-with other Urban centres and B-within the town.

A survey of trip frequency of passenger vehicles on a daily basis reveals that 16 buses ply between Kurseong and Siliguri and 2 buses between Kurseong and Darjiling (Fig. 4.13). Other than these there are about 70 trips of buses plying between Darjiling and Siliguri, passing through the town. There are about 50 trips of jeeps from Kurseong to Siliguri, 25 trips to Darjiling, 1 trip to Gangtok, 2 trips to Kalimpong and 4 trips to Mirik. There are about 140 trips of jeeps plying between Darjiling and Siliguri passing through the town. The

neighbouring areas served by Kurseong Town are Dudhia – 4 trips, Ambootia – 8 trips, Dilaram-Tung – 10 trips, Chimney-Deorali – 15 trips and Mahanadi – 10 trips. There are about 40 trips of cars to Dow Hill.

4.4.4 Postal and Telephone services

There are three post offices in the town, one, the main post office, is located at the centre of the town (ward VI) and the other two are located at Dilaram and Dow Hill in wards III and I respectively. The main post office handles about 1,000 registered and ordinary letters everyday. The post office sells stamps of different denominations of about Rs. 5,000/- everyday. It has about 5,000 savings account holders and about 10,000 recurring deposit holders.

The Sub-divisional Office of the Department of Telecommunication is situated in Kurseong town. The department has a C-DOT SBM (Single Base Module) with a capacity of providing connection to 1,600 subscribers. In 1947, Kurseong had a Rural Automatic Exchange with a capacity of 50 direct working connections (Dash, 1954). In 1967 the capacity of the Exchange was increased to 300 lines with 185 direct working connections. There was only one Public Call Office (PCO) located at the main Post Office (Gazetteer, 1980).

Presently, the number of subscribers in the town is 1,526. The number of subscribers that was only 878 in the month of November 1998 has increased to 1,526 in the month of June 1999. This was possible due to the improvement in equipment and it also shows that there is a growing demand in the town for new telephone connections. The Kurseong Telephone Exchange also provides facility to Tindharia, south-east of the town and Tung, northeast of the town. The number of subscribers at Tindharia and Tung are 148 and 146 respectively. There are 19 PCO booths in the town and 17 of them are located in the market area.

Kurseong is also important for the location of 140 MB digital microwave, which helps in having telecommunication link between Siliguri and Darjiling. The microwave is located on the ridge, between Eagle's Crag and Constantia, facing the plains.

4.4.5 Fire Service

The Fire Station in the town was set up in 1976 at Burdwan Road in ward IV. On 22nd March, 1998 the new complex of the Fire Station (Pic. 10) near the Bus Terminus (ward

VIII) was inaugurated. The Siliguri Jalpaiguri Development Authority did the site selection and construction of the building. The station has a reservoir with a storage capacity of 1,13,650 litre and the water is collected from the Debisthan Jhora. The station has at present

Pic. 10 : The Fire Station.

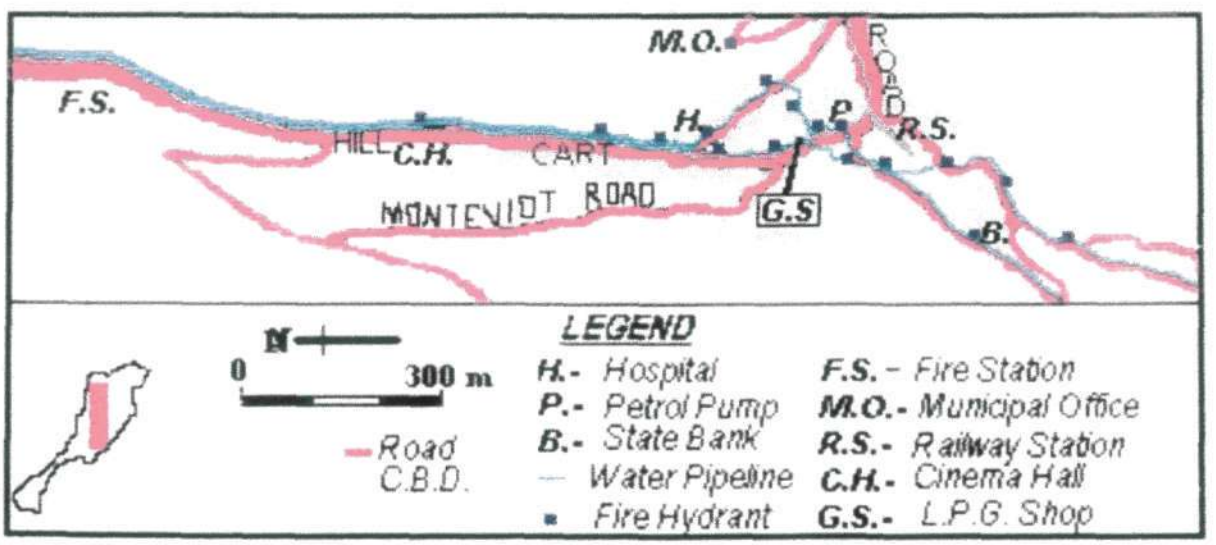


Fig. 4.14: Location of fire hydrants in Kurseong town.

2 fire tankers with a combined capacity of 5,455 litres. Recently, the Municipality has constructed 16 fire hydrants in the market area to be maintained by the Fire Brigade

(Fig.4.14). These hydrants were constructed along the water pipeline, maintained by the Public Health Engineering, from 8-Mile Jhora and Thotey Khola, to the town. But these fire hydrants are yet to get water connection from the Directorate of Public Health Engineering.

4.5 INDUSTRIES

Industries play an insignificant role in Kurseong town. The only known industry in this town is the tea industry. There are two tea gardens – the Castleton Tea Garden (ward XII) and the Montiviot Tea Garden (ward IX), which manufacture tea. The Railway Printing Press, which was set up for supplying printed materials to the different railway offices in the eastern part of India, has been experiencing a decline in its output over the last few years. The Cutlery Servicing Station, which was set up in 1957 during the Second Five Year Plan with lot of hope for the tea gardens, has experienced an untimely death. The Station was set up to render assistance by way of heat treatment, grinding, polish, electroplating, and supply of modern machinery, improved raw materials, power and technical know-how to traditional artisans manufacturing tea garden implements locally. The centre was also engaged in producing pruning knives and saw, skiffing knives and forks for supply to tea gardens.

The factory of the Montiviot Tea Garden is located in ward IX. The tea garden was established in 1856 with an area of 59.91ha. In 1988, the ownership of the tea garden changed hands. The company now manufactures bio-organic tea for the international market. The factory not only manufactures tea of its own tea garden but also of Edenvale and Mullootar tea gardens. The total production of tea from the factory during 1998-99 was 65,000 Kg of which 22,500 Kg was from Montiviot Tea Garden. Manufactured tea is packed in tea chests and paper sacks and then transported to Calcutta where it is auctioned. Average selling price of the factory's tea is at Rs 250 per kilogram. The best grade of tea manufactured at the factory is Flavoury Tippy Golden Flowery Orange Pekoe or FTGFOP-1. Other grades of tea manufactured here are TGBOP, GOF and FOF. The number of workers engaged in the manufacture of tea is seven, of which six are permanent and one is temporary. All the factory workers are male workers. The number of office staff at the factory is 16 and all are male staff.

4.6 OFFICES

In 1875, Kurseong town was made the headquarters of the Kurseong Forest Division. In 1879, it was declared a municipality and the Darjiling Himalayan Railway set up its headquarters here. In 1891, it was made the administrative headquarters of the Kurseong sub-division. With the passage of time more offices started coming up at Kurseong and before independence of India there were 21 offices of the different government departments in the town (Fig.4.15). After the independence more offices of the central and state government departments were set up and at present there are 57 offices, excluding the banks, in the town. The offices are distributed all over the town and it does not have any specific office zone with the exception of an office complex of the Sub-divisional Officer.

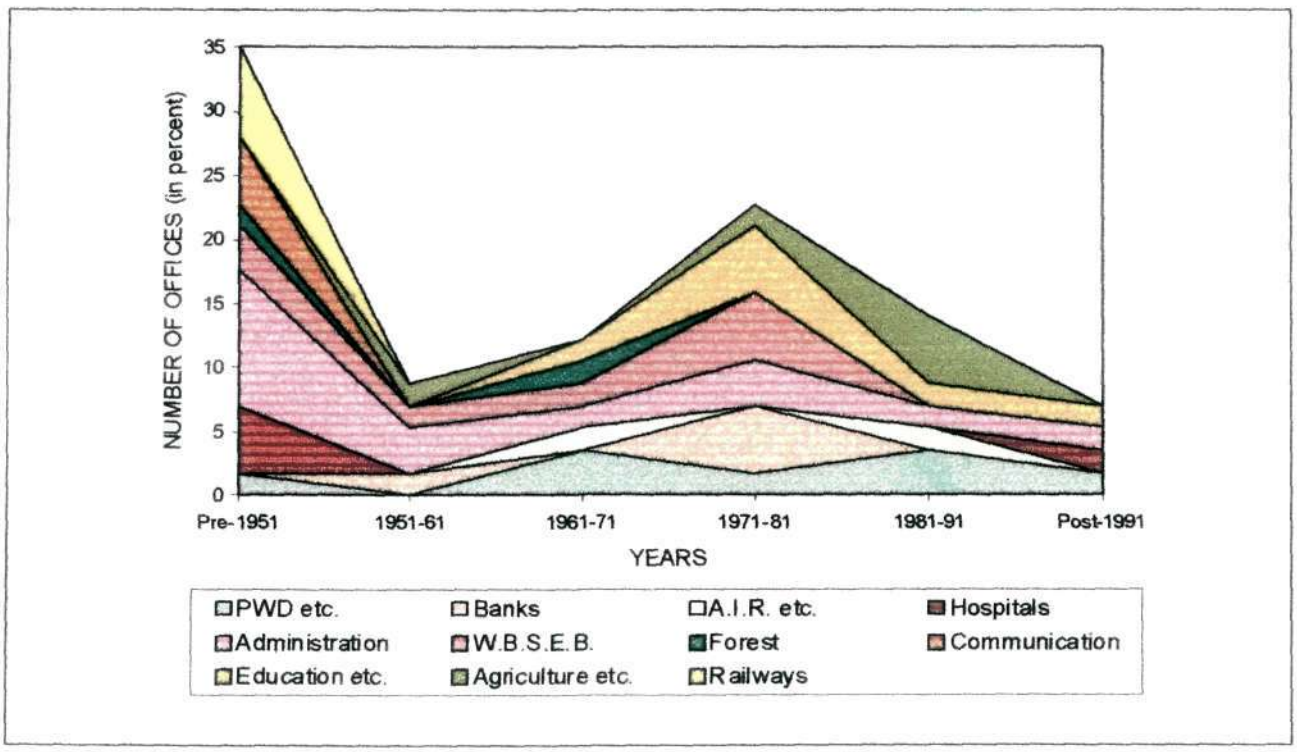


Fig. 4.15: Establishment of different categories of offices in different census years.

There are about 2,511 employees working in the different central and state government offices of which the Railways, administrative and law and order, hospitals and the state electricity board are the major employers. About 86 percent of the staff is male and 14 percent of the staff is female (Fig. 4.16). About 12 percent of the staff working in these offices are from the plains and about 88 percent of the staff belong to the hills (Fig. 4.17). About 38

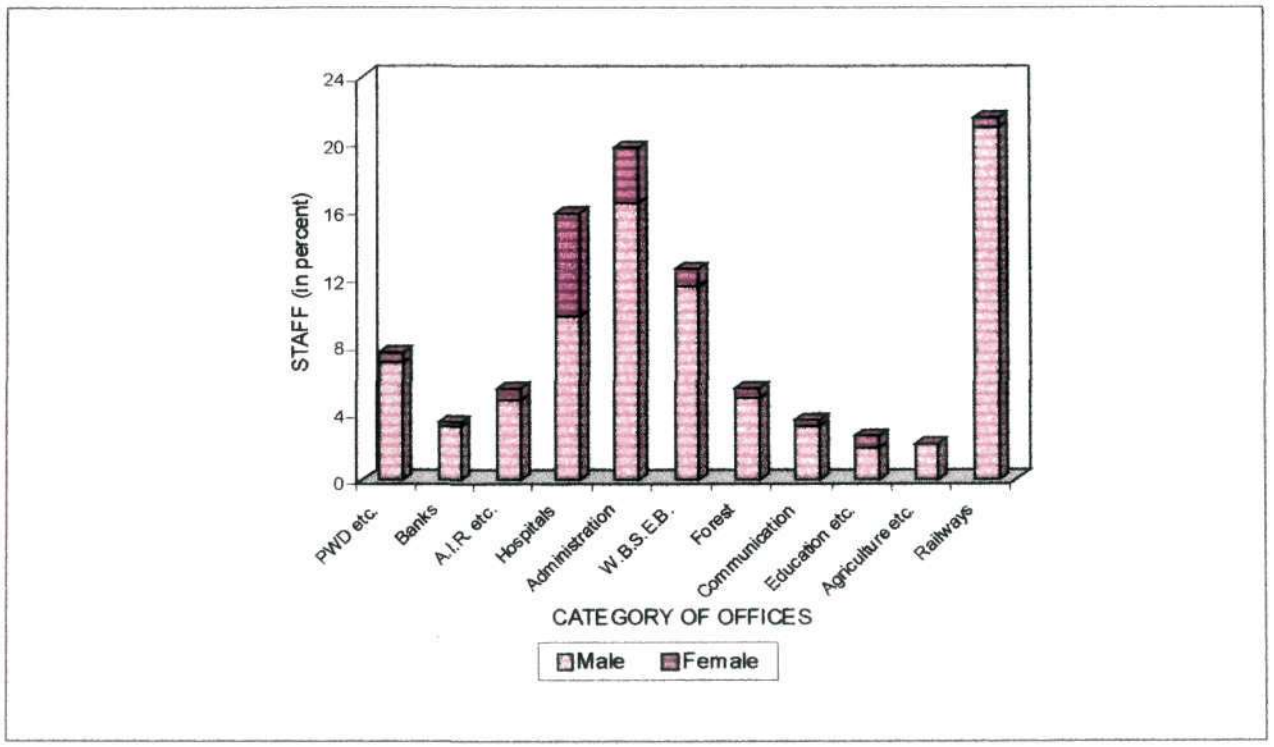


Fig. 4.16: Percentage of male and female staff in different categories of offices.

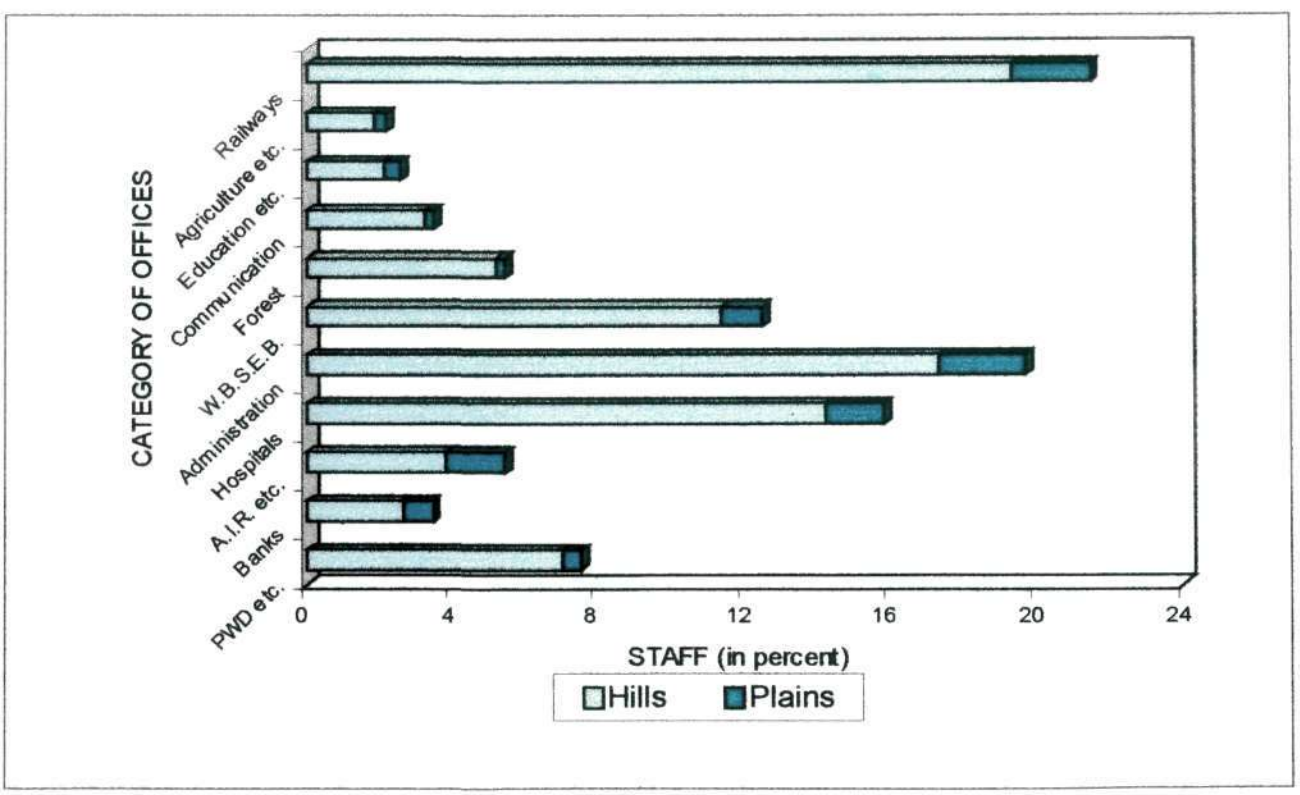


Fig. 4.17 : Place of origin of staff in different categories of offices.

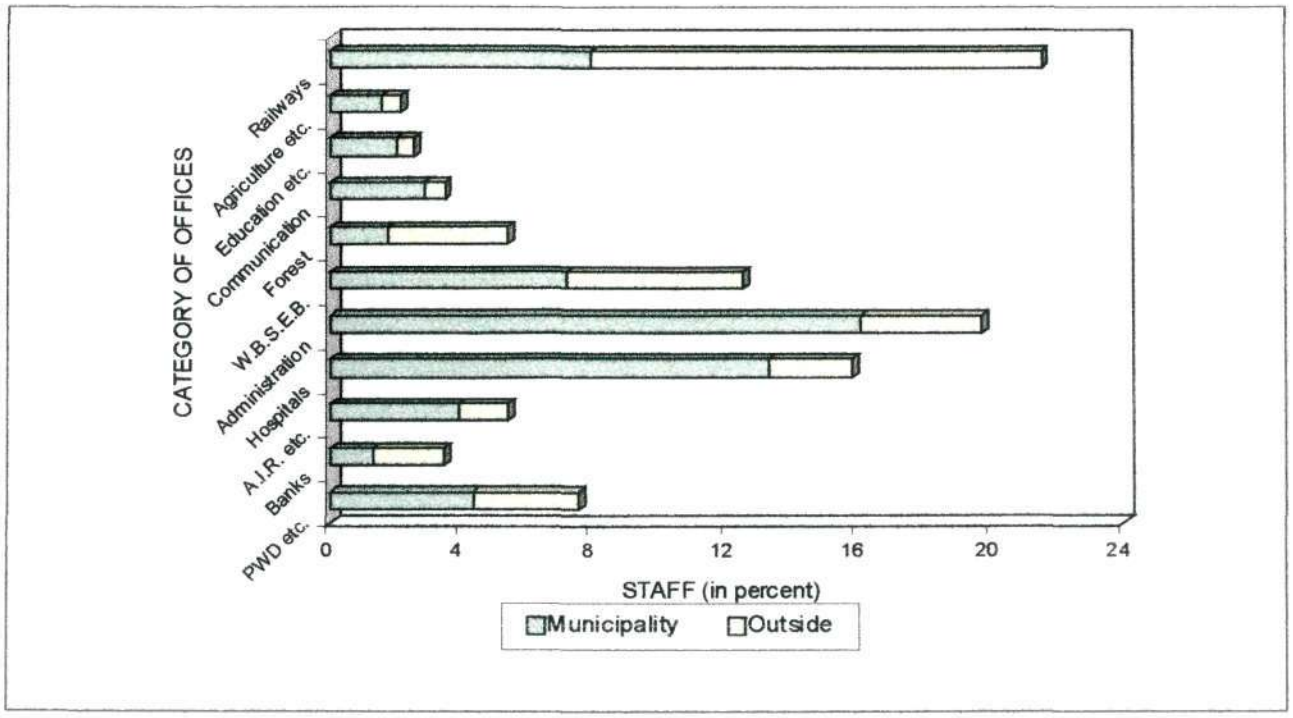


Fig. 4.18: Place of residence of staff in different categories of offices.

percent of the staff commute to the town from the neighbouring areas like Darjiling, Sonada, Tung and Tindharia everyday and 62 percent of the staff reside within the municipality at government quarters or at rented or private houses (Fig. 4.18).

4.7 LIVING CONDITIONS

4.7.1 Housing

Characteristic to its physical features, residential development in this town has occurred in cluster fashion. The type of houses does not show any distinct character like many other hill towns and over the last few decades deterioration and congestion are wide spread. However, the town has some good institutional buildings with great architectural merits. In Dow Hill, there are some western style sloped roofs single family residential houses which reminds the old reputation of Kurseong town as a good place to live.

According to census records Kurseong had a total of 4,432 occupied residential houses in 1991, which were 1,184 in 1971 i.e., an increase of 274 percent during this period. The number of persons living in each of the occupied residential houses was 14 during 1971 and it decreased to 6 in 1991. This shows that the problem of accommodation has lessened to a certain extent during the last two decades.

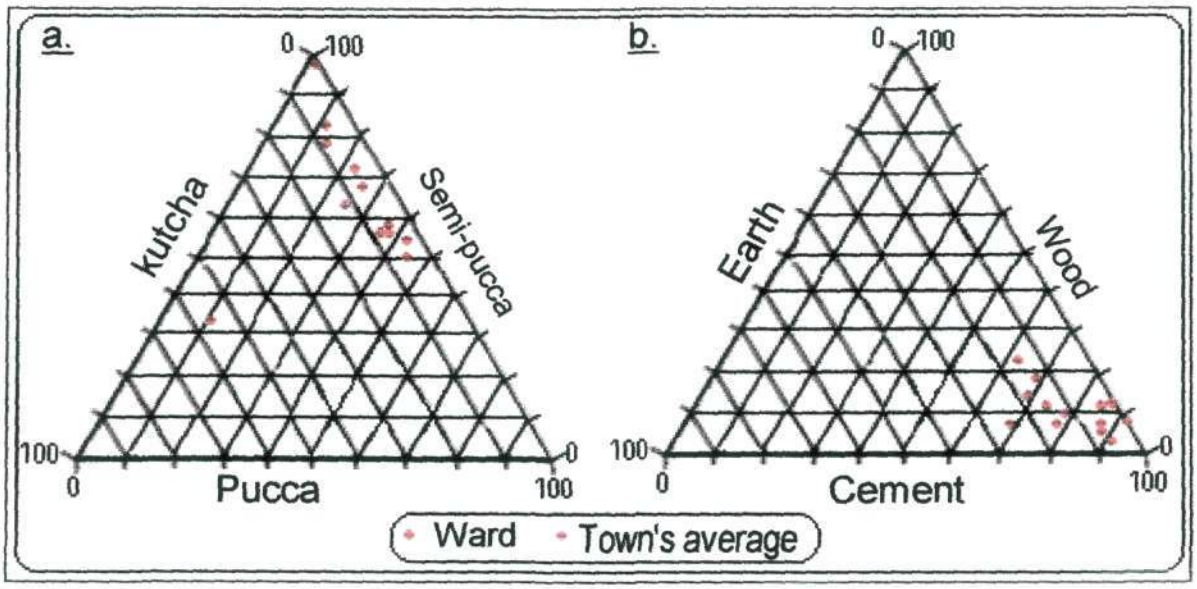


Fig. 4.19: (a) Status of housing units and (b) materials used for floors in Kurseong town.

A physical condition survey of housing units in the town shows that about 25 percent of the houses were entirely pucca with concrete roofs, about 64 percent of the total were pucca with corrugated iron or asbestos roofs and about 11 percent of the houses were kutcha (Fig. 4.19 a). Ward wise distribution shows that pucca houses with concrete roofs are more in number in 4 wards where as in 7 wards the number of pucca houses with corrugated iron or asbestos roofs is more (Appendix). Kutcha houses are found in, all wards except ward I. About 75 percent of the houses have cemented floors, 10 percent have wooden and about 11percent have earthen floors (Fig. 4.19 b).

4.7.2 Water Supply

Kurseong Municipality after its formation developed a water-supply system. Water was obtained from catchment area situated above Dow Hill through 15 springs, which supplied 2,72,760 litre of water. Water was collected in a reservoir with three tanks and was distributed by pipes having a length of 6.44 km. (0'Malley, 1907). In 1913, the Kurseong waterworks scheme was formulated by the Municipality in order to provide filtered water and augment the supply of water to the town. The perennial jhoras around Sepoydhura, about 6.5 km north-east of the town, were tapped and along with the supply from Dow Hill, the water works used to supply about 6,95,540 litre of filtered water and 1,81,840 litre of unfiltered

water to the town daily. A 3,63,680 litre reservoir was constructed near St. Helen's School and water was supplied to this reservoir from Sepoydhura and was distributed 400 house and 60 street hydrants (Dash, 1947).

As the source of water remained the same in spite of considerable growth of population in the town, the Public Health Engineering Directorate formulated a scheme *viz.* Kurseong Water Supply Remodelling Scheme and was approved by the Government of West Bengal in August 1964. The works on the scheme were completed in January 1970 at a cost of about Rs. 12,00,000/-. With the completion of the said scheme, two distinct water supply agencies *viz.* Kurseong Water Supply works under the Kurseong Municipality and the Directorate of Public Health Engineering emerged. It was contemplated that the two agencies would be able to supply about per capita 90 litre of water per day but the target remained a distant dream even though same improvements were made.

Pic. 11 : The service water reservoir at Eagles Crag.

In 1977, a storage reservoir with a capacity of 2,72,76,000 litre was constructed at Dow Hill for tapping the water of Baba Khola, Panigaira and Dharay Khola. Two service reservoirs of 4,31,870 litre were constructed at Eagles Crag (Pic. 11) to increase the supply of water to the town. Earlier water was supplied to this reservoir from the storage reservoir at Dow Hill but due to damage to pipeline, water is now supplied to this reservoir from Thotey Khola near Tung and 8th Mile Khola, north-east of the town.

The total water supply, which the town gets from different reservoirs, is 10,45,580 litre per day. Depending on the supply of water from different sources, the town is divided into

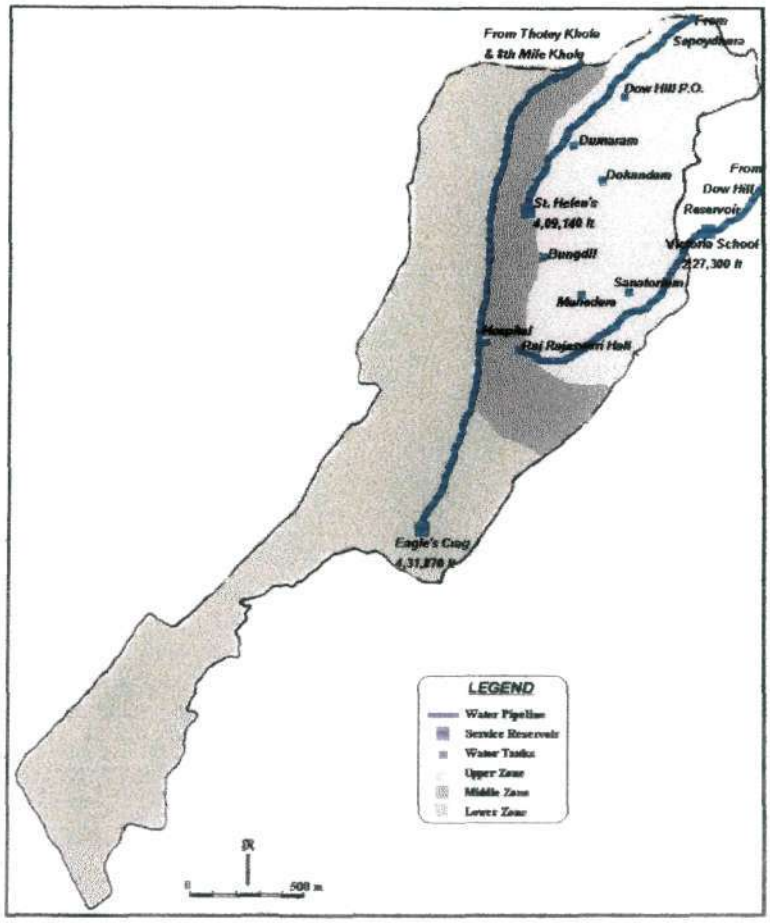


Fig. 4.20 : Water Supply map of Kurseong town.

three zones – upper, middle and lower (Fig. 4.20). The upper zone comprises the eastern part of the town and receives water from the service reservoir of 2,27,300 litre capacity located near Victoria Boy's School. The service reservoir gets its supply from storage reservoir at Dow Hill and Chitray and Pawa Kholas. Water from the service reservoir is supplied to water tanks located at Dow Hill Post Office, Dokandara, Dumaram, Maney Dara, TB Sanatorium, Bangdil and Sub-Divisional Hospital.

The middle zone is located between the upper zone and the Hill Cart Road and gets the supply of water from service reservoir of 4,09,140 litre capacity located near St. Helen's School. Water from this reservoir is distributed directly to the houses in this part of the town. This service reservoir taps its water from springs at Sepoydhura and Aringalay Basti near Tung.The lower zone comprises the western, central and south-western part of the town and

receives the supply of water from service reservoirs at Eagles Crag and is distributed directly to consumers.

The drinking water from different service reservoirs and water tanks is conveyed to individual consumers by gravity flow through a network of distribution system of pipelines. The municipality maintains this distribution system. The filtration plants are located at service reservoirs near Victoria Boys' School, Sepoydhura and Eagles Crag.

Despite tapping of new sources by the P.H.E., effective supply of water to the town's population has not improved to the desired extent and thus, the supply of water to the consumers is restricted to one hour (7 a.m.-8 a.m.) during the lean period and during the monsoons the supply is for two hours – one hour in the morning (7 a.m.-8 a.m.) and one hour in the evening (5 p.m.-6 p.m.).

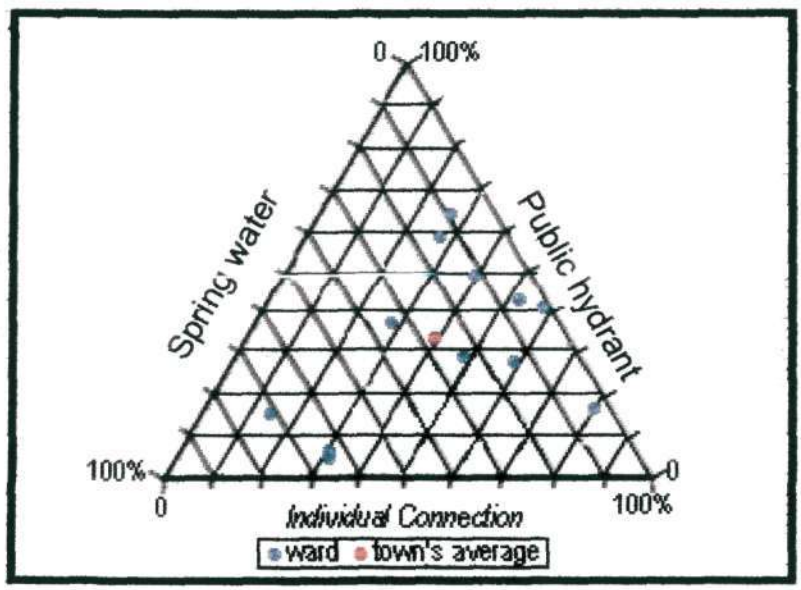


Fig. 4.21: Availability of drinking water in the town.

Data collected from the field survey reveals that about 39 percent of the town dwellers have individual water connection whereas about 33 percent get their water from outside sources like public hydrants and another 28 percent collect their water from jhoras, untreated (Appendix). Ward wise distribution reveals that percentage of individual water connections is poor in 6 wards whereas percentages of people depending on unfiltered water from jhoras are high in 4 wards (Fig. 4.21).

4.7.3 Drainage

Kurseong is one of the heavy rainfall areas in Darjiling district with an average rainfall of around 4000 mm. Due to the natural advantage of a steep east-west slope and a number of jhoras running through the town, drainage of storm water is not a serious problem. Despite heavy rainfall run-off is very quick and the storm water finds its outlet finally to Balason River through any of theses jhoras. Dhobi Khola and Hussein Khola are two perennial streams demarcating the southern and northern boundary of Kurseong respectively. These two jhoras pass through sparsely inhabited areas of the town and are of less importance as service drainage. But Bhagatbir, Kantli, Septic Tank, Tekbir and Debisthan jhoras serve as major disposal channel for storm water as well as household wastage.

However, due to high storm discharge during rainy season, these jhoras often causes serious problems of landslips and soil erosion along their courses. Measures have been taken in the past for guiding these jhoras but due to lack of proper maintenance the bed of these jhoras has eroded away. Major slips have also occurred in some places. Moreover, collection of building materials from these jhoras has also made them more prone to landslides

4.7.4 Sewerage

In 1918, a partial sewerage system was developed for the town for servicing ten public hydrants and a few houses in the *bazaar* area. The total length of the pipeline was about 6 km. and the entire system was run by gravity flow. The sewerage was previously treated in a closed septic tank and finally discharged into a jhora outside the town. This old and under designed sewer system, due to long neglect and improper maintenance, is now in a very bad state. The sewer lines leading to the jhora remain seriously damaged and the central septic tank is out of commission since 1978. Between 1986 and 1994 the municipality laid new sewer lines of diameter of 225 mm and 300 mm having a length of about 2.25 km.

There are at present 1,869 sanitary latrines in the town of which 958 latrines were converted from service to sanitary latrines. There are 19 community latrines (Pic. 12) in the town of which 18 are managed by the municipality and 1 by the Sulabh International Society. No community latrines are available in wards VII and XI. Ten community latrines are connected to individual septic tanks and the rest are connected to sewer lines. The effluents

Pic. 12 : A community latrine in ward IX.

from these latrines are generally discharged directly into the nearby jhoras and these latrines do not get sufficient quantum of water for flushing the system. The inhuman practice of carrying night soil from service privies by head load continued in this municipality since its

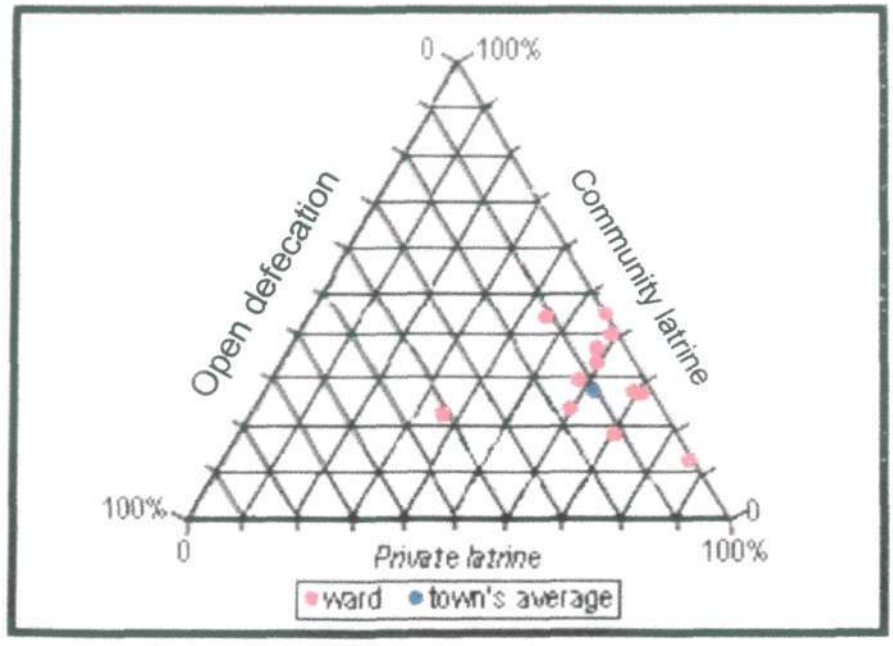


Fig. 4.22 : Availability of sanitary facilities in the town.

inception till 1998. The night soil was carried by the sweepers during the early hours of the day and dumped into the septic tanks of the public latrines or into the sewer lines. The

sweepers and scavengers were to work in an environment with full risk of health hazards. But with the financial help from the government, the municipality has helped in conversion of service privies into pour flush latrines and practice of carrying night soil by head load was done away with since 1999.

It is evident from Fig.4.22 that sanitary standard in Kurseong town is much below the essential norm laid down by the Public Health Authorities. About 11percent of the town dwellers defecates in open areas whereas about 28 percent and 62 percent of the town dwellers use public or community latrines and private latrines respectively. Open defecation is more (40 percent) in ward V and using public or community latrines are more prevalent in 6 wards (Appendix).

4.7.5 Solid Waste

Major sources of solid waste are the domestic sector, residential schools and the market area. At present solid wastes are collected from roadside by the municipal sweepers, which are then dumped into the community vats, 44 in number. A tractor-trailer and a truck owned by the municipality collects solid wastes from the vats and dumps them in the dumping ground beside Bourdillion Road located in ward IX (presently ward XIII). At present about 8 tons of solid wastes is generated of which about 50 percent is handled by the authority. About 60 percent of the vats are located along the main thoroughfares of the town *viz.* Hill Cart Road, Burdwan Road, Monteviot Road and Acharya Bhanu Path and the rest are located in the residential areas.

Refuse characteristic depends on a number of factors such as food habits, cultural tradition, and socio-economic and climatic conditions. It varies not only from city to city but even within the city and also seasonally. The analysis of collected refuse samples reveals almost the same trend as obtained from the analysis of refuse of other municipal cities/towns in India. The physical analysis is on wet weight basis, which helps in choosing the system for collection and processing. Table 4.5 shows the comparison of solid waste characteristic of two hill towns – Darjiling and Kurseong with that of Silguri.

The present total strength of sweepers is about 65 but this number is highly inadequate for the increased volume of sanitation and conservancy services that are now being provided by the municipal authority.

Table 4.5 : Solid waste characteristics of Darjiling, Kurseong and Silguri.

	Item	Darjiling	Kurseong	Siliguri
1	Colour	Greyish black	Greyish black	Greyish black
2	Odour	Obnoxious	Obnoxious	Obnoxious
3	Density (dry basis, gm/cc)	0.48	0.51	0.55
4	Paper, card board, cloth, jute, rags etc. %	7.8	5.63	10.3
5	Rubber and leather %	1.84	0.88	1.00
6	Vegetable wastes and putrescible matters %	38.16	35.23	40.4
7	Plastics %	7.54	8.71	7.66
8	Glass %	0.31	0.36	0.38
9	Stones and unburnt coal wastes %	5.13	6.72	6.00
10	Ash, loose earth, cinder, sand etc. %	38.28	41.68	33.6
11	Ferrous and non-ferrous metals %	0.94	0.79	0.66
	Total in %	100.00	100.00	100.00

Source: Draft report of Consulting Engineering Services (India) Pvt. Ltd.

4.7.6 Electricity

The peak demand of electricity in the town is during 6 p.m.-9 p.m. and it is around 3 MW and the demand during non-peak hour is around 1 MW. Bulk consumers like the All India Radio, Doordarshan and the Castleton Tea Garden also consume this electricity. Initially electricity used to come from Faji Hydel Power Station in the Balason valley. But with the setting up of the 33 kV Salbari Sub-station near Siliguri and the 33 kV Ghoom Sub-station near Darjiling, power now comes to the Phankhabari 11 kV Sub-station in Kurseong town from either of these two 33 kV Sub-stations. At present power comes from the Ghoom Sub-station but the supply is usually low and remains at 8-8.5 kV (approx.). Faji Power Station supplies about 20 percent of the town's total demand of electricity. Rinchintong Hydel Power Station, which used to supply electricity to the town, is now defunct due to technical fault. The electricity received by the 11 kV Phankhabari Sub-Station is distributed to the different parts of the town by step down transformers. There are approximately 5,000 domestic consumers and 10 industrial consumers in the town. The main industrial consumers are the *atta chakies* (flourmills) and the grill fabrication units. The West Bengal State Electricity Board (W.B.S.E.B.) also supplies electricity to the municipality for streetlights. There are 520 street lamps of 100 watts, 9 street lamps of 200 watts, 51 street lamps of 150 watts and 44 street

lamps of 250 watts. The last two categories have sodium vapour lamps. The municipality maintains these street lamps.

The Kurseong unit of the W.B.S.E.B. is under modernisation drive and a computer section has been set up for providing better facility to the consumers. For that purpose the town has been divided into four zones with each zones again divided into sub-zones and there are fifteen sub-zones in the town. The zones and sub-zones were demarcated on the basis of number of domestic consumers and the prospect of development in terms of consumption in a particular area.

4.8 RECREATIONAL FACILITIES

4.8.1 Libraries

There are three public libraries and one Sub-divisional library in the town. The oldest library in the town is the Gorkha Public Library, established in 1913. The library is affiliated to the Sahitya Akademi, New Delhi and runs without any recurring assistance from the government. The old building of the library, which came up on a plot of land donated by the Raja of Burdwan, was destroyed in a devastating fire in 1986 and the present building was completed in 1989. The next library to come up in the town was the Muslim Library Institute in 1932. This library is also a privately run library although it received a one-time grant of Rs 1,000 from the Wakf Board. The Bloomfield Library was set up in 1944 and in 1964 it was given the status of a sub-divisional library. It is a privately managed government-aided library and has three staff to look after it. The other library is the Unit Library of the WBNVF and is primarily meant for the personnel of the National Volunteer Force.

Table 4.6 : Libraries in Kurseong town.

No.	Name of the library	Year of establishment	Number of members	Number of books
1.	Gorkha Public Library	1913	350	1,703
2.	Muslim Library Institute	1932	100	1,000 (approx.)
3.	Bloomfield Library	1944	141	10,000 (approx.)
4.	Unit Library, WBNVF	1960	50	700 (approx.)

Other than these public libraries, the numerous residential schools in the town also maintain their own libraries for the benefit of their students.

4.8.2 Public Halls

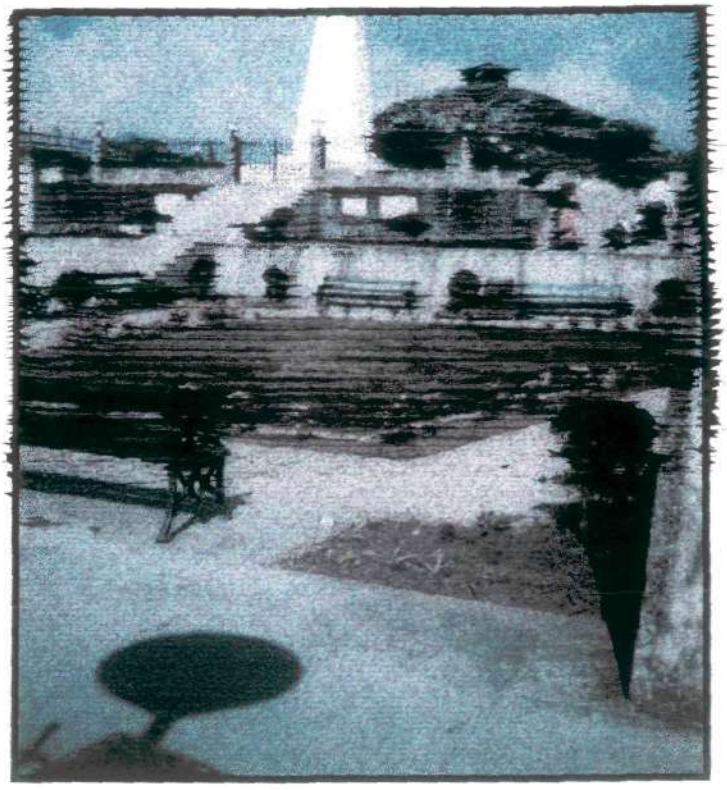
There are two public auditoriums and one cinema hall in the town. The oldest auditorium is the Raj Rajeswari Hall, established in 1930 with a sitting capacity of 350 seats. It is a privately managed hall run by the Bengali Association of Kurseong and was built by the munificence of S.B. Dey and the Raja of Bardhaman. The other auditorium is run by the Gorkha Dukha Nibarak Sangha (G.D.N.S.) and has a sitting capacity of 425. The cinema hall has a sitting capacity of 400. The Raj Rajeswari Hall and the G.D.N.S. Hall are situated near the office of the Municipality and the Montiviot Road respectively and the cinema hall is situated along the Hill Cart Road.

There are at present four video halls in the town. Even four years ago there were 14 video halls in the town, which were doing brisk business, but due to the spread of cable network in different parts of the town the demand for watching movies in the halls has dwindled. Over the years owners of some of the halls either closed them or started different business in the existing premises.

4.8.3 Parks and playgrounds

There are two parks located in and around Kurseong town. One park is situated at Eagles Crag and the other park named as Deer Park, is located at Dow Hill, outside the municipal boundary. The park at Eagles Crag (Pic.13) has one monument constructed in the memory of the people who gave their lives for demanding a separate state – Gorkhaland. The park also has an observatory tower from where one can have a view of the plains in the south and Mt. Kanchenjunga in the north. The Deer Park is situated 5.5 km from the Railway Station and as the name suggests has an attraction of few animals like yaks, rabbits, Himalayan Civet, monkeys and birds.

There are two public playgrounds – Chandmari and Montiviot in the town. Of the two playgrounds, Chandmari ground is bigger than the Montiviot but no development has taken place at Chandmari due to the unwillingness on the part of the Ministry of Defence, Government of India to handover the right of land to the civil authorities. A pavilion has been recently constructed at the Montiviot ground and most of the games and public functions like the celebration of the Independence Day on 15th August are conducted here.



Pic. 13 : The park at Eagles Crag.

CONCLUSION

The educational institutions play a very important role in the growth of Kurseong town. Over the years the number of educational institutions has increased and there are 40 educational institutions in the town of which 11 are secondary and 4 are higher secondary schools. During the pre-independence period two distinct types of schools came up in the town – one for the Europeans and another for the local people. Private entrepreneurs set up all the English medium schools, which came up in the post-1970 period. About 55 percent of the students in the surveyed schools are boys. Most of the post-1970 English medium residential schools are small in size. The vernacular medium schools cater to students coming not only from within the town but also from neighbouring villages and tea gardens. The students studying in the residential schools come from different places but about 50 percent of the students are from the town itself. The demand for education through English medium in a hill station and growth of a neo-rich class has helped in growth of schools in Kurseong town. The

English medium schools have helped in the generation of employment. Female teaching staff are more in number than male teaching staff.

There are two hospitals in the town of which one deals with general patients and the other with tuberculosis stricken patients. The general hospital (Sub-divisional Hospital) has at present 100 beds and offers different facilities to both outdoor and indoor patients at nominal cost. The number of patients reporting to the tuberculosis hospital has dwindled over the years.

The grocery shops account for about 26 percent of the total number of shops in the town followed by hardware, stationers', small workshops and wholesale shops. Most of the shops are concentrated at the centre of the town (wards VI and VII) and in wards around the CBD. Few shops have come up in the localities away from the centre of the town. There are three nationalised banks and one co-operative bank in town of which State Bank of India is the largest.

The Darjiling Himalayan Railways, which was laid in 1881 to improve the transportation network in the hills, has lost its importance over the years as a carrier of people and goods. Kurseong town is well connected with Siliguri by the Hill Cart Road and Pankhabari Road and with Darjiling by the Hill Cart Road. The different localities in town are well connected with either metalled roads or with pedestrian walkways. Due to the centralised location of Kurseong town near about 180 taxis and buses plying between Siliguri and Darjiling pass through Kurseong town every day. There are 1,526 telephone subscribers in the town and 19 public telephone booths. There are two factories in the town, which manufactures tea for the market.

Because of the town's status as a sub-divisional headquarters, offices of different government departments are found in this town. There at present 57 offices and are scattered all over the town. Most of the employees are from the hills and reside within the municipality.

Different types of houses from corrugated roofs to concrete roofs and from single storied to multi-storied buildings are found in Kurseong town. About 25 percent of the houses are pucca and about 11 percent of the houses are kutcha. The town at present gets a supply of 10,45,580 litre of water per day from different sources. Only 39 percent of the town dwellers have individual water connection where as about 22 percent of the town dwellers still depend on untreated jhora water. The central septic tank is out of commission and the entire sewerage of the town is discharged into the jhoras. About 62 percent of the town dwellers have

individual latrines where as about 11 percent defecates in the open. Every day the municipality handles about 50 percent of garbage in the town. The electricity is supplied to 5,000 domestic and 10 industrial consumers in the town through 11 kv Pankhabari Sub-station.

The growth of different functions and social infrastructures in the town has on one hand resulted in economic prosperity of the town and on the other hand resulted in congestion, sub-standard housing and unhealthy environment. There is a need to know in detail the basic problems faced by the town.

CHAPTER V

PROBLEMS ASSOCIATED WITH LAND, PEOPLE AND ENVIRONMENT

INTRODUCTION

The area and population of an urban centre increases with urbanisation of the region. India and many other developing countries are suffering from the problems of urbanisation and often they have population densities much higher than many western cities. Due to population pressure on the one hand and marginally improving living standards on the other, the demand for urban services is steadily increasing. The gap between available urban infrastructure and their demand among the public has been increasing continuously due to resource constraints. There is inequitable distribution of available services among the poorer sections. The poor comprise nearly half of the total urban population and hardly participate in the benefits of the available urban services. Thus, each and every town is facing the problem of deficit and uneven distribution of urban amenities. The town under study has many such problems, of which some are very acute and need attention for identification. This chapter deals with some problems, which were identified at the time of field study.

5.1 PRESSURE OF POPULATION

The study of population problem through various perspectives at a national level is of paramount importance. It has evoked interest among different scientists and academicians (Singh, 1985). But growth of population plays a conflicting role in the development process as it can act both as a stimulus and an impediment to growth and development. The common view of today, as far as the developing countries are concerned, is that rapid population growth presents an obstacle to the growth of living standards (Thirlwall, 1987).

Recently, the study of population growth has drawn much attention of social scientists not only in India but also abroad. Such studies are more important for areas, which are densely populated and seem to have reached saturation level in the context of the prevailing technological and economic conditions. In the densely populated regions, even low rate of population growth has aggravated the problem of increasing pressure on resources, which evolve different responses of people in the areas (Thirlwall, 1987).

The analysis of population growth, therefore, holds significance for a hill town like Kurseong where the growth was rapid in the last decade. In 1991, the density of population was

very high in ward VII (415 persons/ha) and was followed by wards VI (310 persons/ha) and IV (179 persons/ha). Kurseong town has one centre of population and thus the density of population is the highest in these wards. The high density of population in these wards has resulted in vertical growth at the town's centre. Single storied buildings are slowly giving way to multi-storied buildings (Pic. 14) with scant regard to building rules. This has not only resulted in congestion of houses but also is creating a pressure on existing physical infrastructures of the town.

Pic 14 : Congestion of houses in the CBD.

The growth of density of population in Kurseong town during 1971-91 was 62.95 percent. Six wards have experienced a growth rate above the town's average. These wards have experienced an increase in density of population due to the availability of vacant land where construction of houses was possible. The vacant lands either belonged to the individuals or tea gardens or to the government. About 43 percent of the land in Kurseong town belonged to the Maharaja of Barddhaman, which after the Independence of India got fragmented among his tenants. The land ceiling act vested a large part of the land of the Maharaja to the government. Large-scale encroachment took place on these private and vest lands, which has resulted in the coming up of housing areas with sub-standard housing. As very less vacant land is left behind, the future growth of the town lies either in horizontal growth outside the municipal boundary or vertical growth within the town, which is not good for the health of the town.

Even though the Kurseong Municipality does not classify any particular area in the town as a slum, there are areas like Abraham Busty, Upper Dumaram Busty, Sherpa Busty, Subedar Busty, Gandhi Tar, Gandhigram, Sudhapa Tol, Ranikoop and Bhanu Tol, where the houses are sub-standard and sanitary conditions poor. The main reason behind Kurseong Municipality having such a policy is that unlike in the plains the slum areas in Kurseong town are not contiguous areas and have a mixed character of both good and sub-standard houses. Instead of declaring a particular area as a slum, the municipality identifies families, which are living below poverty line in different part of the town, and on the basis of the findings it submits proposals to the government for funds for slum improvement programmes. As per the municipality's figures about 32 percent of the families in the town are living below poverty line.

5.1.1 Slums dwellers and their living conditions

Definition of slums has its root mainly in deteriorating and sub-standard housing and overcrowding, sanitation, poverty and the character of the very site/area occupied by the slum, and its location in the ecological setting within the sprawling city (Prakasarao, 1983). No city can be considered healthy which tolerates within itself the existence of a highly congested area with only minimum amenities of life, where some of the poorest elements of the population are huddled together in almost sub-human conditions, observed the First Five Year Plan. The Plan recognised slums as a national problem and a disgrace to the country. Successive five year plans laid down strategies to clear and improve slums.

It was the Sixth Five Year Plan, which suggested that attempts at massive relocation of slums in urban areas be given up altogether as it not only entailed hardship to the occupants but also resulted in unnecessary destruction of existing housing capital. The accent was on investment to provide basic minimum amenities. The Eight Five Year Plan observed that the positive role of urbanisation is often overshadowed by the evident deterioration in the physical environment and quality of life in the urban areas caused by widening gap between demand and supply of essential services and infrastructure. The findings of the 49th National Sample Survey Organisation, authored by B. Bhushan, economic advisor to the ministry of urban development (The Statesman, 29 May 1999), reveals that:

(i) nearly half of the declared and undeclared slums (48 percent of the total of 1.17 lakh) are in urban areas;

(ii) housing conditions of 69 percent of the urban slum dwellers are very poor;

(iii) thirty-two percent of the urban slums have no drainage facilities; and

(iv) underground sewerage system exists in only 17 percent of urban slums.

The study also says that slums are formed for no fault of their occupants but due to the failure of the growth model to accommodate these vulnerable groups in the mainstream of socio-economic development of urban India. Expressing concern at the extent to which vulnerable sections have been deprived of facilities, including safe drinking water and sanitation, the study has recommended sweeping changes, including the establishment of specialised agencies.

A survey of the poorer families in the town reveals that 25 percent of the families have less than four members in their family; where as about 41 percent of the families have more than 6 members in their families (Fig.5.1a). In Abraham Busty, Dow Hill Lines, Upper Dumaram Busty, Sherpa Busty, Dhobi Khola and Shitalu Basty the percentage of families with more than 6 members is more than the town's average (Appendix).

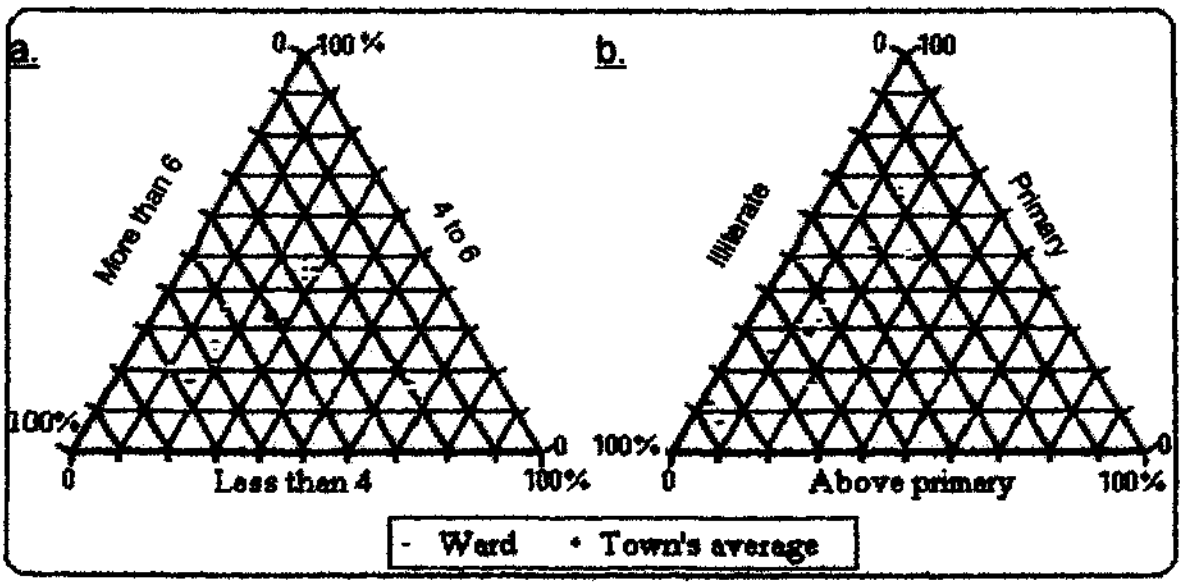


Fig. 5.1: (a) Size of families and (b) status of literacy among the poorer families in Kurseong town.

The status of literacy among the head of the families shows that about 58 percent of them are illiterate, 29 percent having primary education and about 13 percent having education till class VIII and above (Appendix). In Sherpa Busty, Dhobi Khola, Sudhapa Tol, Buddhagram and Butcher Busty the number of illiterate are more than the other areas in the town (Fig.5.1b). One interesting find of this survey was that there is awareness among the illiterate parents to send their children to school. About 65 percent of the children of school going age are attending schools.

The condition of houses of the poorer families shows that about 11 percent of houses have earthen floor, about 70 percent of houses have floors made of locally extracted stones and 18 percent have brick or cemented floors (Fig. 5.2 a). As stones, which are either extracted from jhora beds or by excavating slopes for construction of houses, are easily available the number of houses with stone floors is more than any other materials (Appendix).

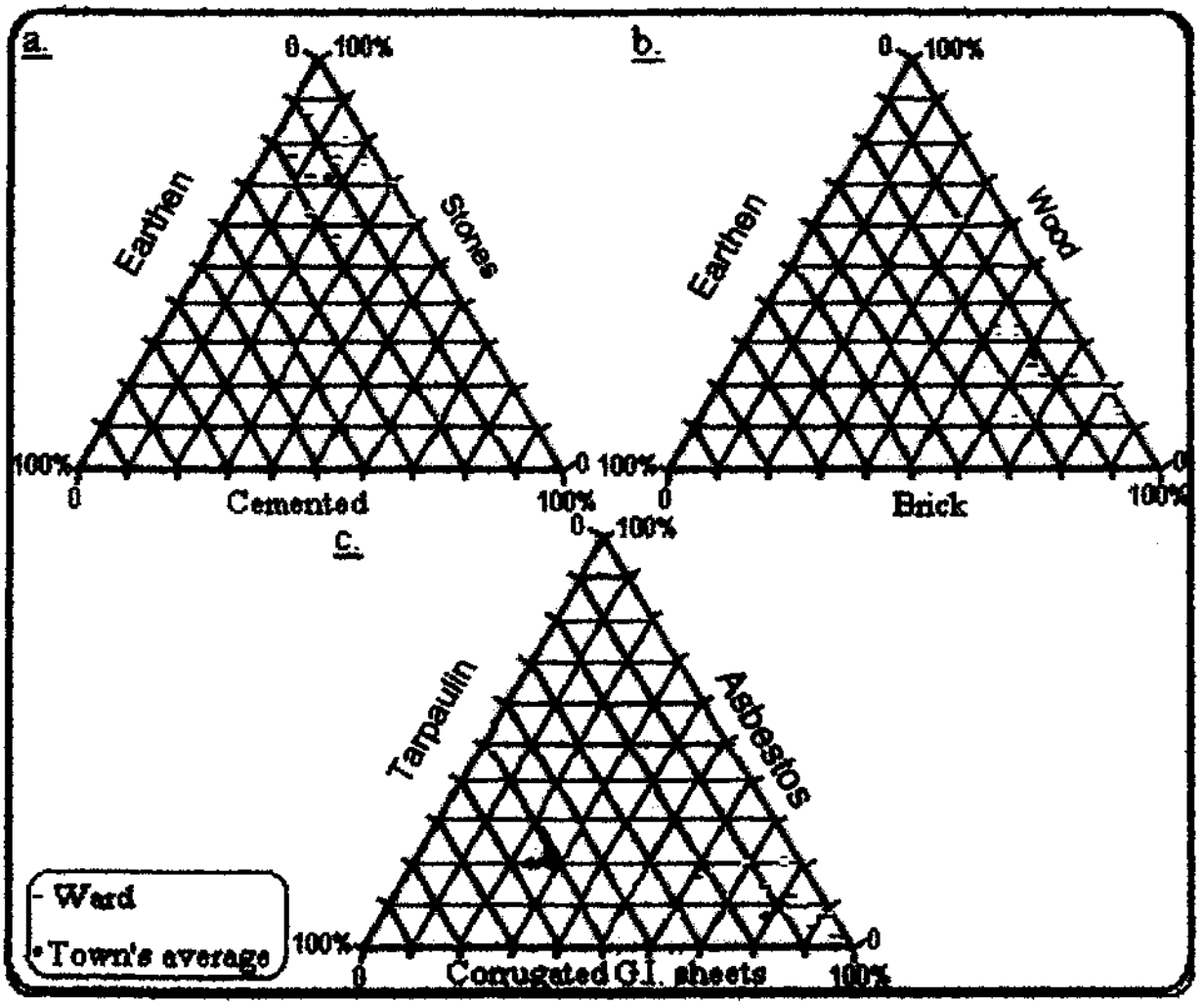
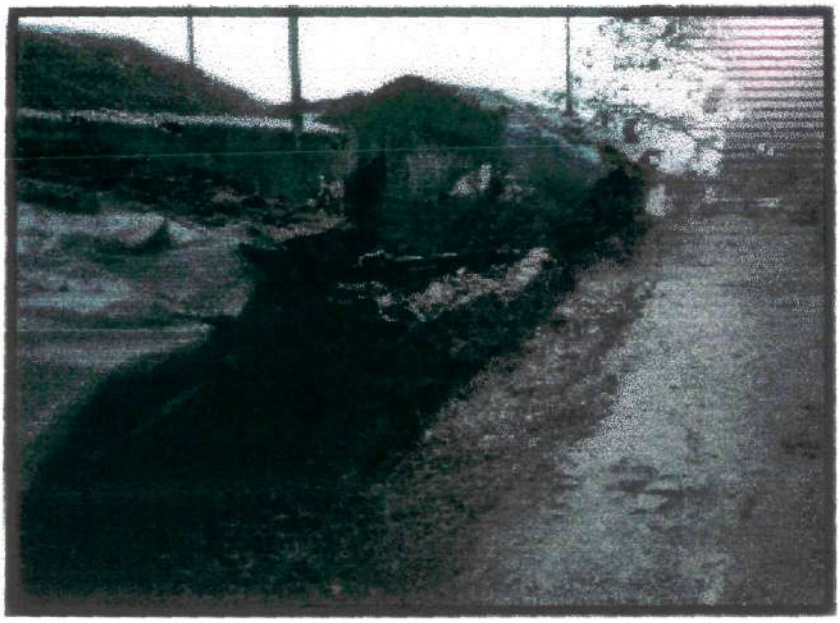


Fig. 5.2: Building materials used for making (a) floor, (b) walls and (c) roof.

The status of walls of the houses shows that about 62 percent of houses (Appendix) have either brick or stone walls where as about 27 percent of the houses have wooden and about 11 percent have earthen walls (Fig. 5.2 b). The preference for making houses with stones and wood over other materials is due to the availability of stones and illegal timber locally.

About 4 percent of the houses are covered with plastic sheets (Pic. 15) where as 89 percent of the houses have corrugated G.I. sheets (Fig. 5.2 c). As Kurseong town's rainy season lasts for about 4 months, the general preference among the households is to have their houses covered with corrugated G.I. sheets or asbestos sheets and this is mostly done by taking credits from hardware shops. The general trend among the households in the town shows that the building materials used for making houses is normally the same in all the areas in the town (Appendix).



Pic. 15 : Condition of roofs in Sherpa Busty.

About 45 percent of the households get their daily need of water from jhoras and this supply of water from the jhoras decreases during the lean months. Only about 8 percent of the households get their supply of water from the municipality through individual connections. 47 percent of the houses use water from the public hydrants provided by the municipality (Appendix). Households in Dow Hill Lines, Abraham Busty, Sherpa Busty, Dhobi Khola, Sudhapa Tol, Gandhigram and Ujaregaon use more of jhora water than any other areas in the town (Fig. 5.3 a). The supply of drinking water to the households either through public hydrants or individual connections is still a dream for the municipality.

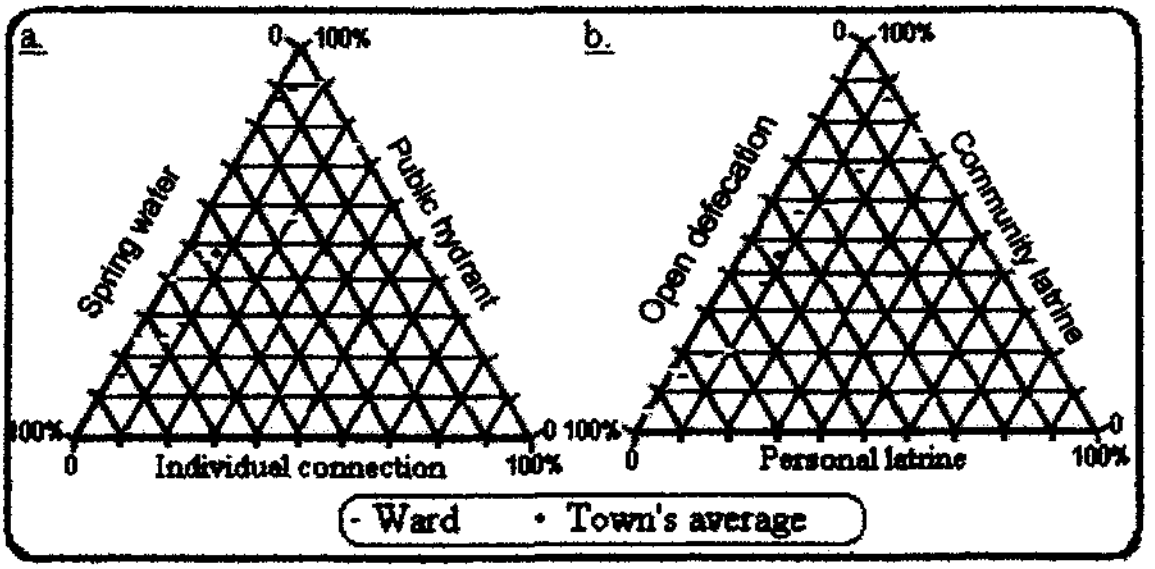


Fig. 5.3: Availability of (a) drinking water and (b) sanitary facilities among the poorer families.

The availability of sanitary facilities among the households is very poor. Only 9 percent of the households have latrines of their own, where as about 48 percent of the households defecates in the open (Fig. 5.3 b). This reflects a sad state of affair in the case of standard of sanitation in the town. About 43 percent of the households use the facility of community latrines, which are also in a bad condition (Appendix).

5.2 LAND USE PROBLEM

There are problems concerned with *viz.*, intensive use of land so as to achieve maximum possible profit, and changes in land use from non-urban to urban which involves the actual loss of land from a particular land use that should be permissible only after estimating the net loss in terms of its production and exploring the possibilities of its compensation. It is essential to examine the historical and inter censal growth of the towns and class of towns as influenced by sites and situations, pattern of change in urban land use with an estimate for the future, relationship existing between the morphology and land use and lastly land use planning (Ataullah, 1985).

An attempt has been made to study the various categories of land uses together with location and historical background. Various functions, which the town performs, have been studied in relation to urban population for the determination of problems created by human beings to meet their certain requirements. The residential areas cover majority of the urban land

in the town with Central Business District at the centre. Like most of the towns in the country, the town under study has similar land use characteristics and land use pattern.

Comparative figures for various uses also reflect the inconsistency of distribution of quantum of land under various uses. The hilly nature of land in Kurseong is a major controlling factor for transportation and urban growth. These inconsistencies need to be minimized in the future development of the town on the basis of development plan, which should spell out the proposals in this respect.

5.2.1 Inter-relationship of different uses

The land use pattern, which has presently emerged, is an outcome of successive decisions – conscious and unconscious, formal and informal taken during the past. The outcome is reflected through the existing land use pattern. Even a glance at the existing land use map gives an impression that land use pattern evolved till this date is not satisfactory. In the beginning of Kurseong development attempts were made by the local authorities to ensure an organised development of the town. Because of a serious pressure on land, it has not ever been possible to ensure a desirable relation among various uses in the area and the overall settlement pattern has ultimately assured a disorganised development of predominantly mixed uses. Like all other Indian cities, the city centre is the main hub of multifarious activities. Many activities have found their places in this hub even though they do not form compatible relationship with commercial or residential uses in the area. The National Highway along with the railway line between Siliguri and Darjiling pass through the hub of the town and the vehicles park along this road for loading and unloading.

5.2.2 Inefficient land use

Some of the Government offices, educational institutions and others are functioning at places, which are not suitable for these activities. Moreover, in some cases the land, which is at present utilised by them, can be utilised much more efficiently for other uses. Some land uses, which are considered as inefficient, are the godown of the Food Corporation of India near the municipal shopping complex in the C.B.D. (ward XI) and the Taxi Stand near Railway Station among commercial uses. The Sub-divisional Hospital and educational institutions along the main road are considered as incompatible public and semi-public uses. The Rifle Range ground or the Chandmari ground is owned by the Ministry of Defence, Govrnment of India and despite a

number of representations made by the local populace and authorities for transfer of title of the land to civil authorities nothing has been done. This has prevented essential improvement of the ground as a public playground.

5.2.3 Selection of norms and their application

The urban land use plan is indeed an expression of the human behaviour in a city. For allocating appropriate proportion of land to different uses, the selection of norms is based on Webster (1958) and William H. Ludlow (1966), supplemented by Indian standard. Although, standards have been followed, variations have been allowed keeping in view the need of the town and its neighbouring region.

The main problem of residential areas is the lack of space for residential and other uses and over congestion around the Central Business District. The permanent green belts of reserved forest and tea gardens and the steep slope of the area, resulting thereby a cramped and congested township, have restricted the expansion of the township. In developing countries, the cities are facing a problem of over crowding which is the result of high intensity of residential land uses. Overcrowding again is reflected in the densities of houses and households (Yadav, 1979). According to Webster, in an average city, about 40 percent of the developed area are in residential use. The Indian standard for this use is also the same. According to Ludlow, an average of 4.0 ha land per 1000 population under residential land use for the construction of dwellings is an ideal set up which accounts for about 33 percent of the total urban land in the town. In Kurseong it is 50.38 percent, far above the average. The higher percentage of land devoted to this land use is because of other uses, which are less prominent than they should be. The greatest problem or shortcoming in this use is the very high density in the central zone. As a result of uncontrolled sprawl and unplanned development, high density has come to exist at the cost of proper road widths and essential civic amenities. There are many pockets of blighted areas. The other shortcomings of this use are its mixture with commercial uses at the centre of the town and construction of houses on moderate to steep slopes and along the jhoras, with scant regard to building regulations.

In the commercial area, business establishments have encroached upon residential houses. This mixed use has several disadvantages *e.g.* unhealthy condition of living, paucity of sunlight in the residential houses due to vertical growth, air pollution and disposal of garbage. The problem next in importance arising out of this is and the presence of godowns and wholesaling,

that is leading to traffic congestion and unsanitary conditions. According to Webster, 2 to 5 percent of the developed land is in commercial use where as Ludlow suggests 3.3 percent of the land under commercial use. In the town commercial land use covers 3.9 percent of the urban land in the town. Two shortcomings of this use are – majority of the shops are located at the centre of the town and people living at Dow Hill, Dumaram, Naya Basti and Fatakdara far away from the centre have to travel a long distance to purchase even the articles of day-to-day use; and the privately owned educational institutions have come up in an unplanned and haphazard manner. The private English medium residential schools not only lack in playgrounds but also in spacious classrooms and dormitories.

By any standards the town lag behind others in respect of industrial land use. Only 0.23 percent is devoted to this land use whereas according to Webster's standard it should be of 10 to 15 percent and according to Ludlow the percentage should be 3.31 of the developed area. The low percentage is due to lack of resources and absence of raw materials except tea for setting up of medium and small-scale industries. Even cottage industries are non-existent.

On an average, about 28 percent of the developed area is devoted to transport and communication and the land used for such purpose (10.4 percent) is far below the norm in this town. The need of a parallel road to lessen the pressure on the Hill Cart Road and other roads is evident but the topography of the town is an obstacle to the construction of roads in the town. About 10 percent of the developed land is devoted to public and semi-public land use, which should be at least 16 to 22 percent according to Indian standards. The problems of ill distribution and shortage of space are also observed. The institutions are distributed unevenly and at misfit sites. The educational institutions like the Pushparani Roy Memorial High School and Scotts Mission Girls High School are situated at congested locality. These schools are facing problem of shortage of space at present and are likely to face greater problem in the near future. Government offices are scattered haphazardly and there is a need to develop a centralised office zone.

Urban land use expands at the cost of open space. It covers about 4 percent of developed land in the town and is unevenly distributed. In theory, an effort should be made to distribute these areas over the town in accordance with the population pattern, but in practice political and market considerations often cause spatial inequities, and thus major amount of open space is found in some pockets. The general planning standard for parks and playground space is given as a ratio of unit of land under parks and playground to population unit. According to Ludlow the ratio is 0.8 hectare of parks and playground to 1000 persons. This shows that for a population of

30,000 the area under parks and playground should be of 24 ha where as the actual area under this use in this town is only 10.485 ha. This problem of lack of parks and playgrounds is going to aggravate in the near future with the increase in population.

The expected future land use and population projection for 2001 and 2011 shows that the town that is already facing many land use problems, will rise in future. If the urban area is not extended and different land uses are not allocated properly, the land use pattern, which is unbalanced, will become very unbalanced and irregular in the future. The central area is already congested with commercial and residential uses and needs thinning out.

5.3 SOCIO-ECONOMIC PROBLEMS

The main problem associated with medical, educational, administrative facilities etc. is their uneven spatial distribution in the town. The hospital is situated near the bazaar, which makes other parts unattended and untouched by medical facilities. Likewise, the distribution of educational institutions too has very uneven distribution pattern. It is found that often the students have to come after kilometres of walk to a part of the town where these facilities are available. The main administrative function of the town is situated away from the centre of the town and cause great inconvenience to the people. Rests of the offices are situated in rented houses in the residential areas.

5.3.1 Medical Facilities

The Kurseong Sub-divisional Hospital, which was set up in the early part of 20th century, has undergone many changes. Extensions of buildings have been made in order to cater to the needs of the ever-growing population of the town as well as of the sub-division. New disciplines of medical facility have also been started but the hospital suffers from some inherent problems of which some are avoidable and some unavoidable. The problems, which the hospital faces, may be listed as follow:

(a) existing bed strength in the hospital is insufficient and needs to be enhanced to keep parity with the increasing population;

(b) as the hospital is situated at the centre of the town, the scope for further expansion is restricted. As such there is extreme paucity of space for the outdoor and indoor patients. The hospital wards are small in size and cannot accommodate patients during an emergency. There is

no separate nursery for children, no isolation ward for contagious diseases and no Intensive Coronary Care Unit.

(c) space for laboratory and radiology departments is insufficient. The new blood bank, which has been started, also lacks in space;

(d) there is no incinerator in the hospital and thus its refuse finds its way to the garbage dumping ground of the town without any treatment;

(e) the toilets for the indoor patients and the sewerage system are in poor shape;

(f) hospital buildings need repair;

(g) the hospital compound is not fenced and with many illegal entry points at times causes security problems;

(h) there is no conference hall in the hospital compound to provide health education programmes and conduct conferences or symposia on medical orientation;

(i) there is no separate space for the hospital kitchen and the hospital laundry has a makeshift arrangement;

(j) there is an extreme shortage of quarters for medical officers, nursing staff, superior category of G.D.A.'s, drivers and sweepers.

In 1936, when the S.B. Dey TB Sanatorium was set up it was thought to be an ideal asylum for the tuberculosis stricken patients. With the passage of time more lands were acquired and new buildings were constructed to accommodate an increasing number of patients. Many individuals donated money and constructed houses for the welfare of the needy patients. Till the seventies trustees of the Calcutta Medical Aid and Research Society were running the hospital smoothly, but later on due to mismanagement the Government of West Bengal had to intervene and took over the management of the hospital from the society. As the number of staff working at the hospital was less, the Government increased the number of staff to 180 and raised the salary of the staff as per government rules. But other than increasing the number of staff and raising their salary the Government did nothing to improve the infrastructure and condition of the State Hospital. The major ills faced by this hospital are:

(a) due to the change in the pattern of treating patients suffering from tuberculosis and growth of Primary Health Centres at the block level in the different districts of the state the number of patients reporting to this hospital has deceased tremendously. At present the average number of

patients staying at this hospital remains at 150 and thus even though the hospital can accommodate more than 300 patients at a time, it remains under utilised.

(b) as the number of patients coming to this hospital has decreased, the hospital remains over-staffed with more staff dealing with less number of patients.

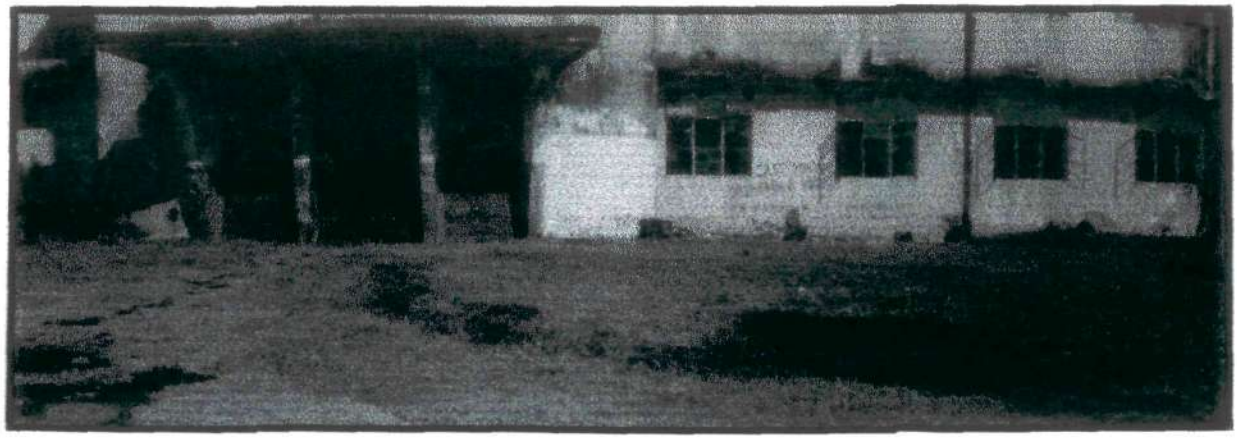
(c) there is a general apathy among the staff in the maintenance of the hospital and condition of the wards is dismal.

(d) the hospital is without an incinerator since August 1995 and thus all its refuse which are contagious in nature finds its way either into open drains and jhoras or are dumped in pits without proper protection.

(e) the washing tank which was constructed for cleaning of hospital and patients clothes is now used by the washermen of the hospital and their relatives to clean clothes of children studying in different residential schools along with the clothes of the hospital patients. This practice is highly objectionable as it may lead to spread of an epidemic.

(f) there is a lack of initiative on the part of the Government to run the hospital and to utilise the infrastructure available in the hospital efficiently. The building constructed by the Railways is lying unoccupied (Pic. 16),

(g) the hospital's campus is about 8.094 ha and even though plans were made by the Public Works Department during '89-'90 to fence it, the whole scheme remains on paper and no action has been taken.



Pic. 16 : The unutilised Railway Annexe.

5.3.2 Trades and Commerce

The National Highway and the railway line of the D.H.R. passes through the centre of the town and majority of the shops are located on both the sides of the road. These two factors attract

heavy traffic movement throughout the day. Lack of parking space forces the trucks, buses, jeeps and cars to use the national highway for loading and unloading of goods. Further, numerous vegetables and other shops have come up in front of the existing shops and as there is no footpath along the road pedestrians' walk on the streets, which leads to congestion. The location of the LPG shop in the heart of the town (Pic. 17) not only creates problem of congestion by the trucks carrying the LPG cylinders but also is a threat to fire safety. In 1986, the town had experienced one of the worst fires and a repetition of that nature will be devastating for the town's economy.

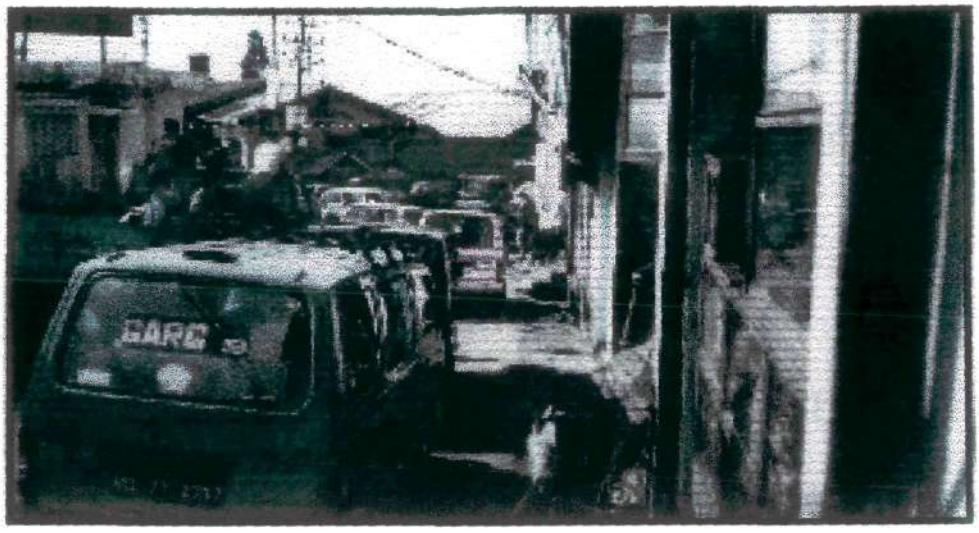
Pic. 17 : Trucks standing in front of the L.P.G. shop.

5.3.3 Transport and Communication

Transportation always plays a dominant role in directing the urban form and the structure of the town. The growth of any town, its trade and commerce, is intimately dependent on its transport network. The most aggravating traffic and transport problems of this town are highlighted as follows:

(i) the railway track crosses the national highway near the bazaar and this creates traffic congestion whenever the Toy Train enters the railway station; (Pic. 18)

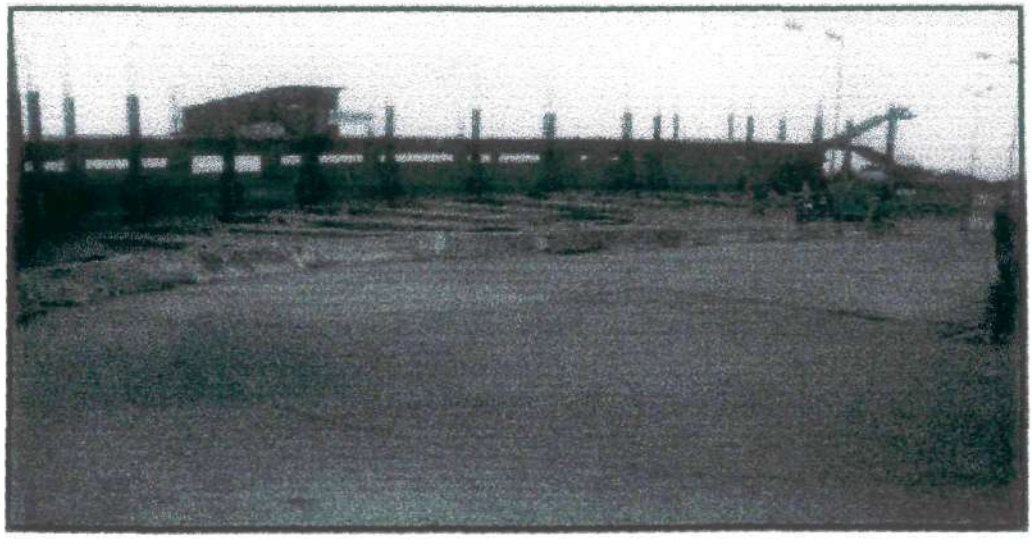
(ii) the Acharya Bhanu Path crosses the National Highway near the railway station and heavy traffic of light vehicles on the Acharya Bhanu Path creates congestion near the crossing point;



Pic. 18 : Traffic congestion near the Railway Station.

(iii) parking of vehicles along the road in the commercial area makes movement of traffic slower;
(iv) the Acharya Bhanu Path, Burdwan Road and the parking area near the railway station acts as terminal points for vehicles plying within the town as well as connecting neighbouring tea gardens and villages and Siliguri and Darjiling.

The INA Bus Terminus, which has incurred an expenditure of about Rs. 3,00,00,000/-, is yet to be completed and remains under utilised (Pic. 19). At present the vehicles do not use it as a terminal point as it is far away from the town's centre and there is no proper transport



Pic. 19 : The INA Bus Terminus.

network to carry the people from the terminus to the different parts of the town and vice versa. The taxis and buses are forced to enter the terminus in order to pay a toll at the rate of Rs. 5/- for small vehicles and Rs. 10/- for buses. Most vehicles avoid entering the terminus by paying the fee to the man at the entrance.

5.3.4 Telephones

The major problems the telephone exchange at Kurseong town faces are its old equipment and paucity of space. The equipment breaks down occasionally and creates problem to the telephone users. The paucity of space is also hindering its modernisation.

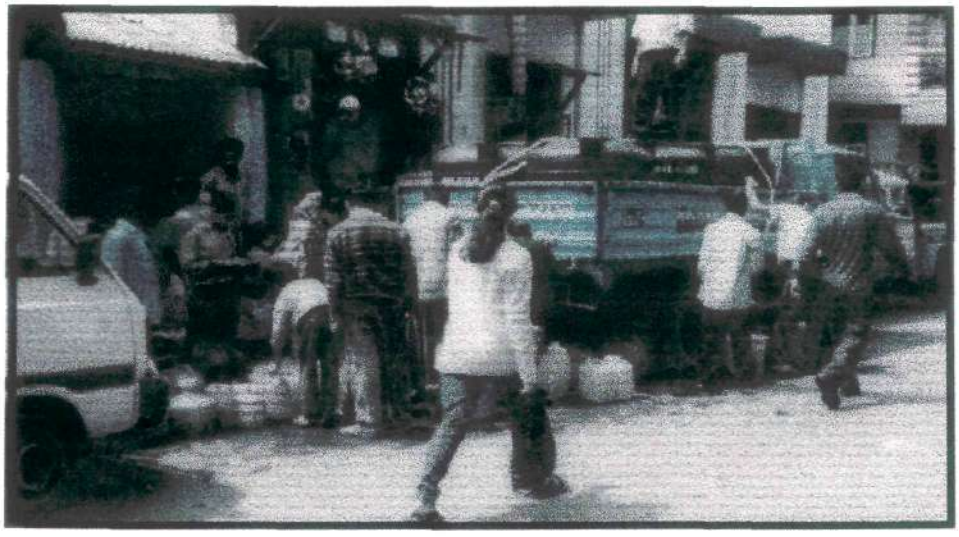
5.3.5 Drinking Water

There are some major shortcomings in the existing water supply system at Kurseong. The feeder mains to the Municipality service reservoir as well as the distribution network have been laid long time back. Due to poor maintenance this distribution system is in a worn out condition and because of leakage loss of water is high. Moreover, over time the population of Kurseong has increased significantly and the township has extended in newer directions. As a result the old distribution lines have not only been rendered highly under designed but also large scale tapping of water pipelines. The field survey shows that still a large portion of the population does not have individual water connection and some are users of untreated jhora water.

There are two distinct water supply agencies in Kurseong – one maintained by the Municipality and the other maintained by the Directorate of Public Health Engineering (P.H.E.). There is a lack of co-ordination between the two agencies and differences of opinion persist regarding utilisation of water. Recently the municipality has constructed 16 fire hydrants for the Department of Fire Services without taking prior permission from the P.H.E. and a feasibility survey of the scheme. The fire hydrants are supposed to get water from the water pipelines coming from Thotey and 8th Mile Kholas to Eagle's Crag Service Reservoir. The permission to provide water to these fire hydrants from the P.H.E. are still awaited and thus the fire hydrants so constructed by the municipality remains dry even after completion.

During 1999, the scarcity of drinking water during March-May reached a crisis point. Old records shows that scarcity of drinking water during lean months is part and parcel of the hills but during March-May 1999 it was unprecedented and there was crisis in general in the three hill sub-divisions of the Darjiling District. The municipal authorities were forced to supply drinking water

by arranging a fleet of makeshift water tankers (Pic. 20). Every day during the crisis period the tankers used to collect water from far away perennial jhoras and distribute it in different parts of the town. This incurred a huge expenditure for the municipality and it had to make an appeal to the Government of West Bengal for providing the necessary funds. Apart from the service provided by the municipality, bulk consumers like the privately run residential schools, hotels, restaurants and businessmen arranged their individual supply by engaging small vehicles for carrying water in water tanks of 500-1000 litres. The cost of carrying water in those vehicles ranged between Rs. 100/- to Rs. 150/- per trip. The crisis led to illegal tapping of water on pipelines coming from the sources as well as from reservoirs. This crisis also led to the growth of an unhealthy practice among some of the pipe fitters to make quick money by manipulating the supply of water.



Pic. 20 : Supply of drinking water by the Municipality.

5.3.6 Electricity

The Kurseong unit of the WBSEB suffers from the problem of shortage of staff and particularly technical staff. The vacant posts are yet to be filled up. The problem becomes acute when breakdown of transformers are more especially during the rainy seasons. Now a day the WBSEB takes the help of contractors for repairing major works like replacing transformers during breakdowns. In Kurseong Town there is only one contractor and lack of expertise on the part of the contractor creates problems especially during major faults or when the number of faults is more.

Like any other offices of WBSEB in West Bengal, this office also faces problems of power thefts and meter tampering and thus recovery of tariffs per unit of consumption is less than the supply. This is a perennial problem and it seems that there is no remedy to over come these problems.

5.3.7 *Tourism*

Till the sixties Kurseong, due to its cosy and comfortable climate, was a favourite spot for seasonal retirement. But an ever-increasing volume of mercantile tourist who had little time for seasonal retirement had slowly replaced this class of tourist. The natural choice of this new class of tourists was Darjiling town, which offered more attractive site for their short duration holidays. With this change in tourist flow, the entire tourist facilities and input services had to be concentrated in Darjiling and its vicinity. Old tourist spots like Kurseong and Kalimpong, despite all their promises, receded to the background with little significance for the tourist flow to the Darjiling hill areas.

5.4 ENVIRONMENTAL PROBLEM

Maintenance of purity and safety of the environment in the face of increasing urbanisation and mechanisation of daily life is emerging as the most challenging problem facing mankind today. The grouping of people together in confined spaces has always produce discomfort, risks of disease, problems of food and water supply, and difficulties in arranging for the disposal of waste. As cities have grown, these environmental problems have become so severe that the liberation the cities provided appears to be reduced by the restrictions imposed by the urban environment. Although the urban dweller has benefited from the greater opportunities for cultural enrichment and social enjoyment, the quality of urban life appears to have deteriorated as the citizen feels more and more threatened by polluted air and water, crowding and noise (Cloval, 1974).

The adverse effect of improper and inadequate solid waste management operations are still only partially appreciated as it is still difficult to link the resultant health effects directly to the inadequacy in waste management.

The primary effects arise mainly from the improper dumping of solid waste both by individuals and by the authorities. On a smaller scale, the scattered waste at the residential neighbourhood act as the breeding ground for mosquitoes, rats, flies etc. that lead to a number of

communicable diseases. In addition to causing unpleasant environment, the scattered waste like blowing paper, polythene and dust along the roads and drains clog the drains resulting in stagnation of water leading to over flow of drains. The individual households also quite often burn the waste in the street corners and backyards leading to release of toxic chemical compounds in the neighbourhood.

At the public authority level, illegal and improper dumping of solid wastes by the official carriers at the periphery of the town with least concern to the location of water sources either surface or underground may lead to leacheate action resulting in the contamination of water sources.

Any of the systems of waste disposal, which leaves organic wastes temporarily exposed, creates disease risks through insects and microorganisms. Often there is insufficient land for proper waste disposal and material may be discharged directly into the nearest watercourse. Such a situation, conducive to the spread of diseases such as cholera, typhoid and dysentery, is particularly likely to occur in the squatter settlements of third world cities (Douglas, 1983).

Major reasons for poor solid waste management operation may be as follows:

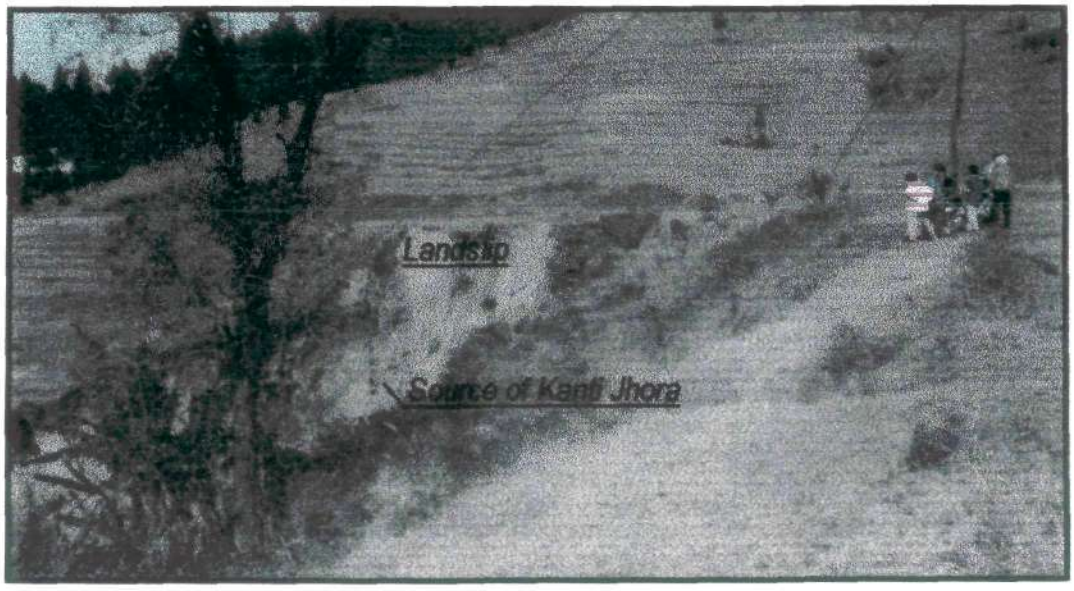
(a) lack of proper logistic planning of operations – solid waste management operations even though appears to be simplistic in nature, require a well thought out logistic planning for effective performance. The number and location of bins, frequency of collection by waste collectors, location of transfer stations, frequency of trips by the vehicles etc. all form important components of the solid waste management operations;

(b) resource constraints – fund availability for maintenance activities has always been limited as often the grant available are mainly for creation of assets and maintenance is left to the local body after the initial few years. Also are difficulties in the revision of tax rates of various sources and service tariffs;

(c) poor maintenance – major maintenance that are required include structural maintenance of community vats, transfer stations etc., maintenance of drains and other installations and disposal sites and maintenance of mechanical plants and vehicles; and

(d) lack of effective control on solid waste management – normally supervision of solid waste removal operation is minimal and left fully to the discretion of the field staff to organize themselves.

Even though deforestation is not a major problem in the town, the forested areas lying outside the municipal boundary, especially at Dow Hill, Deorali etc. are facing encroachments for construction of houses and agriculture. A part of the Sanatorium's land, which was gifted by the Government, remains unutilised and deforested (Pic. 21). Landslip has occurred at the source of Kanti jhora here. Deforestation in the catchments areas of the jhoras has resulted in the drying up of the jhoras flowing through the town.



Pic. 21 : Deforested area.

5.4.1 Sewerage

A skeleton sewerage system is in existence in the town, which is supposed to carry human wastes from community latrines and some private latrines. With low rate of water supply during the lean months, self-cleansing velocity is not attained in the sewers connecting these latrines, which results in clogging of sewers. Other sanitary latrines having individual septic tanks owned by the municipality faces the same problem of water scarcity resulting in filthy atmosphere. Also, superstructures of these community latrines are not in good condition. The major problems faced by the town are –

(a) The effluents from sewer lines and septic tanks are directly discharged into nearby jhoras creating pollution hazards.

(b) The new R.C.C sewer lines having length of about 2.25 km. that was laid between 1986 and 1994 without any design and at places they are not connected.

(c) In the market area, due to space constraints construction of pour flush latrines is not possible. No labour is available for regular inspection and maintenance of existing sewer lines and community septic tanks, which is an essential requirement for proper functioning of the total sewerage system.

(d) Tools and plants required for maintaining the sewerage system are also not available. The municipality does not have any cesspool emptier, night soil tanker or any other type of carrier for collection, transportation and disposal of night soil.

(e) Buildings having individual septic tanks are discharging septic effluent into open surface drains passing through residential areas.

(f) Indiscriminate dumping of sewage on the hill slopes and discharge of raw sewage from the sewer into the jhoras are inviting frequent complaints from the lower area settlements.

(g) Health awareness among the community toilet users is lacking.

(h) Indiscriminate dumping of solid wastes on the roads, into the drains and sewers are adding to the problems of safe disposal of liquid waste in the town.

(i) Unless immediate steps to prevent pollution and alleviate unhygienic conditions prevailing now particularly in the core area are taken, chances of health hazards or epidemic in the near future cannot be ruled out.

5.4.2 Solid Waste

Hazardous solid wastes generated from the hospitals mixes up with municipal wastes. Quite a substantial quantum of solid wastes is not removed regularly (Pic. 22) and these are being dumped locally in adjoining jhoras, ditches and low lying areas by the people themselves which is not at all desirable. A major portion of the garbage is dumped west of Bourdillion Road and burnt which not only creates bad smell but also add smoke, dust and harmful gases into the atmosphere (Pic. 23) portion of garbage finds its way into gully pits, which chokes the drainage system. An increase in the use of plastic bags for shopping and carrying goods has aggravated the situation. The congestion in the town centre and increased

Pic. 22 : A garbage vat.

volume of traffic has increased air pollution to a great extent. Deficiencies as regard to solid waste management are –

(a) less number of community vats;

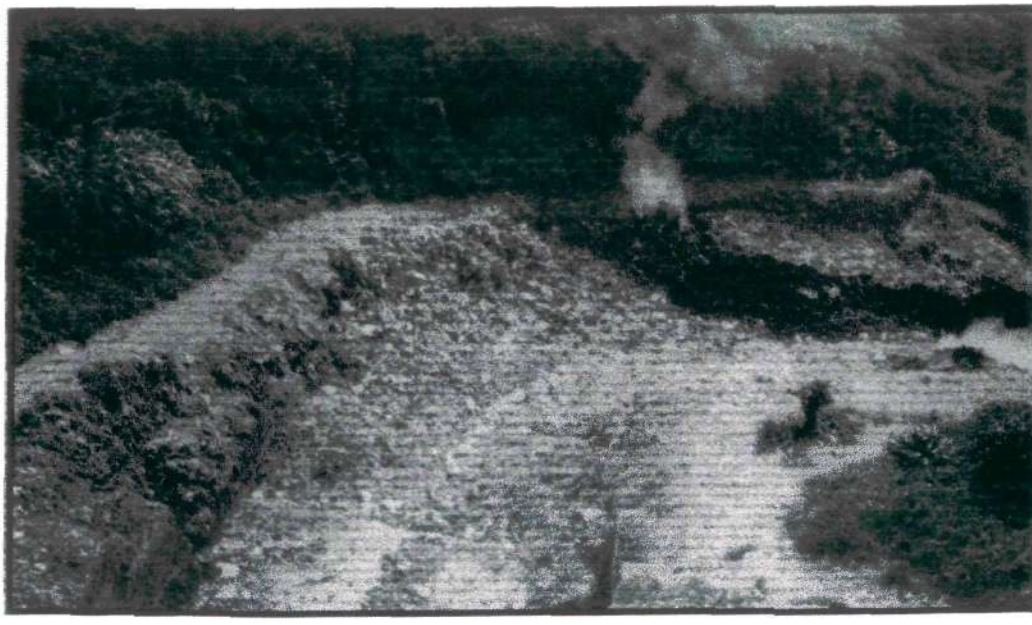
(b) improper distribution of community vats;

(c) low manpower to look after these vats;

(d) non-availability of suitable vehicles for collection and transportation of solid wastes;

(e) non-clearance of solid wastes regularly on routine basis;

(f) non-availability of proper tools and equipment;



Pic. 23 : The municipal dumping ground.

(g) no incinerator for burning hospital wastes and general municipal wastes

CONCLUSION

The increase in population in the town has resulted in congestion and pressure on existing infrastructures. Even though the municipality does not recognise any particular area as a slum there are areas where the living conditions of the people are poor and housing conditions sub-standard. About 41 percent of the poorer families have more than 6 members in their families. In about 58 percent cases in these areas the head of the family is illiterate but there is a growing consciousness among the families to send their children to schools. About 11 percent of the houses have earthen floors and walls and about 4 percent of the houses have roofs of plastic sheets. About 92 percent of the families depend either on public hydrants or on jhoras to get their daily need of water. Sanitary conditions are poor and about 48 percent of the families defecates in the open and about 43 percent of the families use the facility of community latrines.

In Kurseong town residential land use covers more area than the standard norm and increase in population has resulted in uncontrolled sprawl and unplanned development. Commercial land use has remained concentrated at the centre of the town where unhealthy living condition prevails. The private educational institutions in the town have come up in an unplanned manner. The topography of the town is an obstacle to the expansion of roads. The government offices and educational institutions are unevenly distributed and at misfit sites. The town lacks in parks and playgrounds and the ratio is far below the norm.

The Sub-divisional Hospital needs more beds to accommodate more patients, an expansion of space to start new disciplines and for better care of patients and an incinerator. Due to the change in the pattern of treatment of tuberculosis stricken patients, the TB Sanatorium's remains under utilised. The incinerator the hospital was destroyed in a fire and contagious refuse is thrown into open drains or dump pits.

Due to the location of shops on both the sides of the Hill Cart Road, lack of parking space and crossing of railway line near the meeting point of Acharya Bhanu Path with Hill Cart Road have resulted in congestion of the road. The Bus Terminus remains under utilised due to resistance from vehicle operators. Old water pipelines and their poor maintenance increase in population and illegal tapping of water pipelines are the important factors responsible for creating water crisis during the lean months. During March-May 1999,due to acute water crisis the municipality had to spend a big amount of money for supplying drinking water. Effluents from the sewer lines are discharged directly into the nearby jhoras. Lack of machinery is another

problem faced by the municipality for disposal of night soils. The solid waste of the town which also includes hospital wastes is dumped in an open ground and burnt which not only creates bad smell but also add harmful gases into the atmosphere. The rampant use of plastic shopping bags has aggravated the situation.

A thorough knowledge of different problems faced by the town will help in analysing the different developmental projects, which were undertaken in the past, projects undertaken at present and to be taken up in future. These developmental plans will reflect the direction of future growth of the town.

CHAPTER VI

DEVELOPMENTAL PLANS IN THE TOWN AND THEIR ANALYSIS

INTRODUCTION

The process of urbanisation in India, as in many other developing countries, was strongly stamped by its colonial history for the last about two centuries (Raza and Habeeb, 1976). A polarised urban system, in which a few primate cities took away a large proportion of urban population, evolved. The contrast between explosion of cities and stagnation of small towns was sharp, and India presented a peculiar situation of over urbanisation at low level of economic development.

Urbanisation and industrial development, so strongly married in the western world, were often divorced in India (Peach, 1970). The former moved at a faster pace than the latter resulting in direct shift from agriculture to service, as in other developing countries too (McGee, 1971). Tertiary sector expanded more than the secondary, a factor contributing to the prevailing unemployment in urban India. Another salient feature of the recent urbanisation in India was the enhanced role of the accelerating natural increase rate in growth of urban population.

The British introduced local self-government into India in recent times, though India does have an ancient history in this field. Developed on the British system of local government it has never gained the strength of a healthy town management system in India (Lahiri, 1984). The Indian municipal corporations and municipalities appear to be wrecked by numerous problems, including those of structure. The greatest drawback of the Indian City government is its limited power and resources. Much of its functions are related to conservancy, maintenance of existing services, billing and collection of specific taxes etc. The development work of the city is often conducted through the various departments of the State and Union Governments like the State Public Works, housing, health etc.

While the preparation of city master plan is done by the state or planning organisation the execution of the plan faces problems. The multiplicity of bodies involved in the city make

different bodies responsible for the execution of different parts of the plan. To overcome this problem, a number of cities now have Development Authorities constituted by legislation, giving them a wide range of power to co-ordinate and implement the city master plans.

6.1 PAST DEVELOPMENTAL PLANS

The Siliguri Planning Organisation (S.P.O.), presently the Siliguri Jalpaiguri Development Authority (S.J.D.A.), set up in 1964 by the Government of West Bengal, conducted a land use survey of Kurseong town in 1977 and proposed a guideline for future development of the town and its neighbourhood. The planning area consisted of 24 sq. km, which included Kurseong municipal area and its adjoining areas, *viz.*, Giddapahar in the east, St. Mary's and Goethals in the north and Chaitapani and Dow Hill in the northeast. About 58 percent of the total planning area comprised of lush green forest and tea gardens. The Siliguri Planning Organisation developed a conceptual plan and future land use plan for Kurseong and its future development was to be guided within that framework.

6.1.1 Conceptual Plan

The basic concepts of the conceptual plan of the S.P.O. were:

(i) The township shall be expanded into available areas or through acquisition of new areas, the desired direction of growth being perpendicular to the existing linear development and also by renewal and spot development of the existing areas;

(ii) The central area of the town and the Hill Cart Road shall be decongested and instead of sprawl development, land use activity will be organised into different areas;

(iii) The town ship shall be surrounded by 'Green Belt', where Forest lands and Tea Gardens and other aspects of natural beauty will be preserved;

(iv) There will be adequate redistribution of land use activity and various community and capital improvement projects will be taken up for better functioning of transportation, to enhance tourism and institutional development; and

(v) For protecting and enhancing the environment quality of the township no industrial activity other than service industries of cottage and household type will be permitted within the municipal limits of Kurseong town. Growth of industries will be promoted in Dilaram, Tung and Sepoy Dhura areas.

6.1.2 Future Land Use Plan of the S.P.O.

According to the conceptual plan for Kurseong town, it was sub-divided into various development areas on the basis of special characterisation and future zoning. These were (from south to north):

(a) Central Government Area: The central government area lies on the southwestern part of the town. It has a large playground called the Chandmari Ground and the Constantia, Sub-divisional Officer's residence. The play field or the existing defence ground is suggested to be a major recreational area consisting of a small stadium, clubhouse, athletic centre etc. Adequate parking space will be provided slightly to the north of this area. The entire area is to be zoned as institutional public and semi-public uses.

(b) Tea Garden Development Area: This area lies south-west of Castleton Tea Factory and west of the Pankhabari Road. The area slopes down towards the west from the road and is covered with tea bushes. This area has to be controlled. The Tea Research Centre has been proposed in this area and a small area on the western side in between the Tea Garden and the Central Government area is proposed to be developed as residential area specially for Government Quarters. The entire area is zoned as mixed area.

(c) State Government Complex: It has the office of the SDO, the sub-divisional jail. There are some vacant lands available within the complex. At present State Government Offices are scattered. Many of these offices can be located in this complex. The area is zoned as public and semi-public with limited residential uses.

(d) Eagles Crag Development Area: It lies south of the railway station and is known for its cliff just south of it. This area is a vantage point from where one can get a panoramic view of the plains. It is suggested that the area should be developed for residential uses, hotels and institutional development.

(e) Rajbari Area: This is the second oldest residential area in the town. The Maharaja of Burdwan constructed his resting place here. This is already a developed area; some improvement of roads and residential uses will be permitted. Zoned as residential area.

(f) Spring Side Development Area: This area lies west of the Bourdillion Road and north-east of the police station. The land slopes down towards the west from the road and is covered with tea bushes. This area will be a major new expansion for the town. The area will be developed for residential, commercial and transportation uses, hotels and some community facilities. Zoned as mixed-use development.

(g) Central Business District: The Hill Cart Road and the railway line passes through this congested area. The Pankhabari Road meets the Hill Cart Road near the railway station. It is the most congested area of the town. There will be access control on the Hill Cart Road. The pressure on commercial area is to be reduced gradually. The urban renewal of the market will be taken up. Zoned as commercial area.

(h) Dhobi Khola Area: This area lies on the eastern part of the town. This is a low-income area, which will require improvement. No major change is suggested. Zoned as residential area.

(i) College Area: The College area once belonged to Hardeodas and Company and has been gifted by them to the College authorities. The area is a wooded area. This will be an institutional area where development will be controlled.

(j) Upper Town and Lower Town: These are residential areas with some amount of commercial and institutional activities. There are some old buildings in this part of the town and most of the buildings are single storied. Environmental improvements are suggested. Commercial land use will be introduced.

(k) L.I.C. Development Area: It lies east of the Bourdilion Road and is covered with tea bushes. Few encroachments had taken place. This area will be used mainly for the residential and institutional purpose.

(l) Railway Land: The railway has vacant land in the northern part of the town, east of the railway track. The vacant land available in this area will be developed for an integrating and activity oriented centre for young age population of the town, including dormitory type residential facilities. The area is zoned as public and semi-public.

(m) School Complex: This area lies in the northern part of the town and has schools such as St. Helen's, St. Alphonsus etc. The area will remain as such with some road improvements. Zoned as institutional area.

(n) Dumaram Busty Area: This area was once a tea garden and is now deserted. Few encroachments have taken place. This area will be developed as a residential area with some roads and provisions of community facilities.

(o) Sanatorium Area: No change in the set up.

(p) Tekbir Busty Area: This area slopes down west of the Hill Cart Road, in the northern part of the town. There are some residential activities. The area will be developed as residential area with proper conservation.

(q) Dow Hill Area: The oldest schools in Kurseong Town, Dow Hill Girls' and Victoria Boys' schools, are located here. The area has large school buildings and playgrounds. This will remain as it is.

(r) Forest Area: The Dhobijhora Forest is a part of the town and is found in the north-eastern part of the town. It is mainly covered with Cryptomaria Japonica trees. No change and development will be strictly controlled.

(s) Green Belt Area: The tea gardens of Montiviot, Kurbia, Springside, Makaibari and Castleton are a part of the town. The tea gardens will remain as such and there will be control on development particularly on the western side. The area in between Hill Cart Road and L.I.C. Area will be developed as a recreational area.

6.2 ANALYSIS OF THE LAND USE PLAN OF THE S.P.O.

The conceptual plan and on the basis of which the future land use plan for Kurseong town was prepared in 1977 by the S.P.O. remained on paper and hardly any action was taken by any concerned authority for the implementation of the plans. An analysis of the land use plan shows that –

(a) Central Government Area: The transmitting centre of the A.I.R. has been set up at Constantia by dismantling the SDO's quarter, one of the oldest buildings in the town. No improvement has been done to the Chandmari ground, as the owner is still the Ministry of Defence, Government of India, even though many institutions use it.

(b) Tea Garden Development Area: As per the plan the Darjiling Tea Research Institute was set up in 1980 but no Government quarters were constructed as per the proposal.

(c) State Government Complex: No new offices were set up in the vacant land available in the complex. Two four storied residential buildings were constructed by the P.W.D. for government employees. A Rest House for the defence personnel was constructed near the SDO's office.

(d) Eagles Crag Development Area: The Public Health Engineering department constructed two water storage reservoirs for proper distribution of water in the southern and south-western part of the town. Martyrs' monument, a watchtower and a park have been developed by the D.G.H.C. at this place. The Ministry of Information has constructed three sets of residential quarters for the Doordarshan.

(e) Rajbari Area: The oldest residential area in the town has become congested without any development of roads. Many private schools have come up in this area. Lack of space has resulted in vertical growth in this area.

(f) Springside Development Area: This area has mainly experienced residential activity. The 11KV Pankhabari Sub-station was set up here.

(g) Central Business District: A large part of the market area was destroyed in a devastating fire in 1986. After that, this area is experiencing a vertical growth and is highly congested.

(h) Dhobi Khola Area: Even though the area has become a residential area, the housing condition is not up to the standard and needs development.

(i) College Area: No development works other than institutional has been carried out in this area.

(j) Upper and Lower Town: The area has become congested with multi-storied buildings.

(k) L.I.C. Development Area: Most of the area has been encroached upon and has turned into a residential area with a couple of private schools. The Polytechnic College has been set up in this area.

(l) Railway Area: Encroachment of vacant land and quarters has taken place but no developmental work has been taken up in the vacant lands as proposed in the plan.

(m) School Complex: No change has taken place.

(n) Dumaram Busty Area: The area has developed purely as a residential area with pockets of disorganised houses.

(o) Sanatorium Area: No change has taken place in this area.

(p) Tekbir Busty Area: It has become a purely residential area with pockets of sub-standard houses.

(q) Dow Hill Area: No change has taken place in this area.

(r) Forest Area: Except the construction of some quarters by the Department of Forest, no change has taken place.

(s) Green Belt Area: Except few encroachments at some places, the area has remained as such.

6.3 PRESENT DEVELOPMENTAL PLANS

The Kurseong Municipality is carrying on different infra-structural improvement programmes with financial assistance from the Union and State Governments for the town in general and the slum areas in particular. The financial assistance is provided through different schemes *viz.* Swarna Jayanti Sahari Rojgar Yojana (SJSRY), National Slum Development

Programme (NSDP), 10th Finance Commission of the Government of India for slum improvement, Basic Minimum Service (BMS), Integrated Low Cost Sanitation (ILCS), Environment Improvement of Urban Slums (EIUS) and Development of Women and Children in Urban Areas (DWCUA). The municipality has fixed some targets to be achieved during a fixed time span for improvement of physical infrastructures in the non-slum and slum areas of the town. The target includes facilities like supply of piped drinking water, community bathrooms and latrines, garbage pits, drains, water tanks, roads, health care centres, shelter for the under privileged, primary school buildings and street lights to be provided to the town dwellers.

6.3.1 Target for slum areas

Under water supply scheme the municipality has drawn up a plan for lying of water pipeline of 7,000 metres and 180 community water taps with cemented platforms under NSDP and BMS programmes. The costs for execution of the schemes have been fixed at Rs. 20,50,000/- and Rs. 18,00,000/- respectively. Under NSDP 24 community bathrooms and 24 community latrines will be constructed and the total costs has been fixed at Rs. 4,80,000/- and Rs. 12,00,000/- respectively. It has been decided to convert 736 service privies to sanitary latrines under ILCS programme and the total cost has been fixed at Rs. 42,27,000/-. 120 garbage pits will be constructed under NSDP with a cost of Rs. 9,60,000/-.

To renovate the condition of roads a stretch of 26 kilometres has been targeted with a cost of Rs. 39,00,000/- under NSDP and BMS programmes. 36 kilometres of concrete pedestrian walkways have been planned at a cost of Rs. 72,00,000/- and this includes both renovation and construction of new pedestrian walkways. Drains with a length of 6 km are to be constructed under NSDP with a cost of 15,00,000/-. Renovation and construction of guide walls along jhoras for sewerage are to be done for a stretch of 5 km with a cost of Rs. 15,00,000/-. 12 culverts with a cost of Rs. 12,00,000/- will be constructed across jhoras. 12 health care centres under NSDP will be constructed in different parts of the town with a cost of Rs. 6,00,000/-. These health care centres will be the meeting place for community health guides and women of the locality and will help in dissemination of knowledge on general health, hygiene and sanitation.

The landslide prone areas, which were badly affected in 1998, will be provided with shelter houses and the total cost has been fixed at Rs. 20,00,000/- for the construction of 120 shelters. Under BMS programme 6 primary schools will be renovated at a cost of Rs. 6,00,000/-. For proper storage and distribution of drinking water 48 water tanks will be constructed under

NSDP and BMS programmes at a cost of Rs. 9,60,000/-. Different localities will be provided with 120 streetlights at a cost of Rs. 9,60,000/-. The total cost, which will be incurred for the execution of construction works of different infrastructures, will be Rs. 3,27,37,000/-.

6.3.2 Target for non-slum areas

Major financial assistance will come from the 10th Finance Commission for construction of various physical infrastructures in the non-slum areas of the town. Under water supply scheme it has been planned to lay 5,000 metres of water pipeline and 130 water taps with cemented platforms for community use at a cost of Rs. 21,00,000/- and Rs. 7,00,000/- respectively. For community use 12 bathrooms and 12 latrines will be constructed at a total cost of Rs. 19,20,000/-. 60 garbage pits will be set up at various points of the town for proper disposal of garbage in the town.

At a cost of Rs. 15,00,000/-, 16 km of metalled road will be renovated and constructed. Sewerage drains of 6 km length will be constructed at a cost of Rs. 20,00,000/-. Guide walls of 9 km length along jhoras for storm drainage will be constructed at a cost of Rs. 40,00,000/-. These guide walls will help in checking vertical and lateral corrasion of the jhoras. 6 community centres and 2 community halls will be constructed at different parts of the town at a cost of Rs. 6,00,000/- and Rs. 8,00,000/- respectively. Parks, which are lacking in the town, will be constructed at 2 places at a cost of Rs. 10,00,000/-. 10 culverts will be constructed for improving road network between settlements at a cost of Rs. 10,00,000/-. New buildings will be constructed for 4 primary schools at a cost of Rs. 16,00,000/-. The total cost, which will be incurred for the execution of construction works of different infrastructures, will be Rs. 2,00,00,000/-.

6.3.3 Traffic Flow

The problem of traffic congestion, which is acute along the Hill Cart Road and at the meeting point of Acharya Bhanu Path with Hill Cart Road, the municipal body along with the district administration have taken up some measures to overcome the problem. The CBD has been divided into 8 parking zones and spots along the Hill Cart Road, Acharya Bhanu Path, Burdwan Road and Montiviot Road have been fixed for parking of vehicles. These parking zones cater to specific needs of the town and a fixed number of vehicles are allowed to park in those parking zones. The vehicles from these zones ply in different direction of the town. Restriction has been imposed on parking of vehicles especially along the Hill Cart Road and Acharya Bhanu

Path in the town. Even though the Municipality has declared the zones as fee parking zones, it is yet to finalise on the amount to be collected from the parked vehicles.

6.3.4. Income and Expenditure Statement of the Municipality

A look at income and expenditure report of the Municipality for the year 1998-99 reveals that there was an opening balance of Rs. 28,24,450/- and a closing balance of Rs. 10,37,442/-. Under the receipt head it earned about Rs. 25,00,000/- from rent from market, slaughterhouse, land and burning ghat, tax on trades and profession, registration fees and arrears of property tax. It received Rs. 3,20,000/- as taxes on entertainment, toll, trade and profession from the Government of West Bengal. All civic bodies receive this amount as a share based on population collected by the government from the whole state. It also received about Rs. 52 lakhs from the State Government as grant for pay and allowances for its employees. Under capital account it received Rs. 1,64,00,000/- as grant from the Central and State Governments for the execution of different schemes for development of infrastructures of the town. The Municipality also received an extraordinary receipt of Rs. 40,00,000/- from the government for payment of taxes and advances.

On the expenditure side the Municipality spent about Rs. 73 lakhs (21.5 percent of the total expenditure) against pay and allowances for its employees. The civic body spent about 6 lakhs for repair works of roads, building and vehicles. The Municipality met these expenses by mobilising its own resources and through grants provided by the state government under receipt head. The advances it received against capital account were distributed under different heads for carrying on of different developmental programmes. It included expenses on purchase of furniture, vehicles and machinery, construction of fire hydrants, shopping centre, community latrine, drainage and sewerage lines and infrastructure improvement of slums. Some of these developmental schemes take long time to be completed and thus expenses shown in one financial year may not show the actual expenses incurred in a particular year because that expense may be a payment made for an earlier work.

6.4 ANALYSIS OF THE PRESENT DEVELOPMENTAL PLANS IN THE TOWN

6.4.1 Achievement in slum areas

Under water supply scheme out of 7,000 metres of water pipeline, only 1,400 metres of pipeline have been laid at a cost of Rs. 5,80,000/- and out of 180 community water taps with

cemented platforms, only 42 have been fixed at a cost of Rs. 4,14,000/-. Out of 736 service privies 691 has been converted into sanitary latrines under ILCS programme. The target of constructing 24 community bathrooms and 24 community latrines is yet to be achieved. 10 garbage pits out of 120 have been constructed and for the rest work is going on. Only 1,800 metres of road have been repaired with bitumen and 2,400 metres of pedestrian walkway with concrete. Sewerage drain of 2,200 metres length, 720 metres of guide walls for jhoras and 1 culvert has been constructed. Work on health care centres, shelter houses and primary schools is going on and out of 120 street light poles only 3 have been fixed. Till now the municipality has spent Rs. 62,73,000/- on construction works for infrastructures.

6.4.2 Achievement in non-slum areas

Construction work under different schemes is under progress or yet to be started and thus achievement in the non-slum areas is minimal. Under water supply scheme 850 metres of pipeline out of 5,000 metres have been laid and only 10 community water taps with cemented platforms have been fixed. Out of 16 km, only 5 km of metalled road have been completed. The Municipality has spent Rs. 1,17,000/- for the renovation of its own building.

6.4.3 Traffic Flow

The measures taken by the Municipality have helped in easing the problem of traffic congestion to a certain extent but during peak hours and certain period of the year the problem become acute.

6.5 FUTURE PLANS

The different Government Agencies *viz.* the Department of Health, the Directorate of Public Health Engineering, the State Electricity Board and the Department of Tele-communication and the Kurseong Municipality have drawn up different developmental schemes for mitigating the problems faced by the town dwellers by enhancing the present infrastructure set up in the town.

6.5.1 Medical facility

To mitigate the problem faced by the Sub-Divisional Hospital the State Health Development Project of the World Bank and the Government of West Bengal has made the following plans:

(i) to increase the number of beds in all disciplines and the projected number is 165. Proposed number beds in different disciplines are: Medicine – 57, Surgery – 40, Paediatrics – 20, Nursery – 6, Isolation – 10, Maternity – 13, Gynaecology – 15 and Paying Cabins – 10;

(ii) a five-storied building with floor space of 186 sq. metre per floor is to be constructed in between the present chest clinic and OPD complex. The building will be provided with elevator facility. The building will provide space to – (a) chest clinic; (b) family welfare; (c) x-ray/ ECG/ Ultrasound/ biochemical and Pathology units; (d) Operation Theatre complexes with sterilisation rooms; (e) Intensive Care Unit with artificial respiration facilities for chest injury; (f) Labour Room Complexes and Nursery and (g) a Kitchen block;

(iii) another building is to be constructed after demolishing the present SDMO's quarter (Pic. 24) for providing space to hospital's office, conference hall, library, SDMO's chamber and quarter and five set of quarters for medical officers;

Pic. 24 : The demolished SDMO's quarter.

(iv) renovation of the morgue for post-mortem cases as per the recent standards set by the judiciary;

(v) incinerator for disposal of hospital wastes;

(vi) a generator for uninterrupted supply of electricity;

(vii) renovation and re-orientation of electricity of OPD complexes;

(viii) setting up of Intensive Coronary Care Unit (ICCU); Public toilet and Urinal; Sick room for hospital staff and Doctor's;

(ix) fencing the hospital's compound and setting up of security outpost.

6.5.2 Drinking water

The Directorate of Public Health Engineering has taken up an extensive plan to augment the supply of water so that the town does not face a crisis of water, which it faced in 1999. In order to supply 90 litres of water per capita per day as per the United Nation's recommendation to a population of 40,000, the P.H.E. will have to make a provision of supplying 36,00,000 litres of water per day where as its present capacity is only of 10,45,580 litres per day. In order to provide this extra amount of water the P.H.E. has drawn up some concrete plans *viz.* –

(i) development of all the springs from where water is tapped by proper maintenance;

(ii) afforestation on an extensive scale in the catchment areas of the jhoras by involving the Department of Forest and the villagers;

(iii) renovation of the existing distribution system in order to check leakage of water and rationalisation of supply of water;

(iv) laying of parallel lines especially for water pipelines coming from Thotey Khola, 8th Mile Khola and Sepoydhura to check illegal tapping. Separate facilities will be provided to the settlements through which these pipelines are passing;

(v) by tapping jhoras below Chimney, north-east of the town, and pumping that water to Chimney for supplying it to the storage reservoir at Dow Hill;

(vi) construction of another storage reservoir at Dow Hill with a capacity of 1,81,84,000 litres of water;

(vii) by tapping the Eagles Crag spring below Eagles Crag and pumping that water to the Eagles Crag service reservoir for distributing water to the tail end of the municipality like Fatakdara, Dharegaon, Nayabasti and Havaldar Kothi.

6.5.3 Electricity

The West Bengal State Electricity Board is planning of up-linking all its sub-divisional and divisional offices with SATCOM (Satellite Communication) for proper management of its different offices. This facility will help the central office in Calcutta in keeping track with the

day-to-day demand and supply of electricity in different parts of the state and also the recovery of tariffs by different divisions.

6.5.4 Telephone

The sub-divisional telephone exchange has drawn up plans to modernise its equipment and enhance its capacity so that it can cater to an ever-increasing number of subscribers. It plans to convert C-Dot SBM into 2 KMBM (Kilo Multi Base Module). This system can attend to about 2,000 subscribers. The Department of Telecommunication is also planning to set up multi-exchanges at Dow Hill, St. Mary's Hill and Fatakdara and construction of a multi-exchange at Dow Hill has already been started. As the demand for telephone facility is increasing in these areas the multi-exchanges will go a long way in not only providing better facility to the consumers but also lessen the pressure on the main exchange.

A plan has been sanctioned for the construction of a three-storied building to set up a new exchange. This construction will take place at a vacant plot adjacent to the present exchange. The exchange will be a modern one with a capacity of 8,000 lines. Once this construction is completed, Kurseong town and its neighbouring areas will not have any problem in the near future.

6.5.5 The Municipality

As the number of private schools is increasing in the town, which are taxing on the civic amenities of the municipality, the municipal board of Kurseong has decided to declare private schools as commercial enterprises. This decision will go a long way in augmenting the income of the cash strapped municipality. The decision is yet to be ratified by the Government of West Bengal and no modalities have been formulated regarding the basis of assessment and the amount to be taxed on individual private schools.

During 1999, when the town suffered from acute shortage of drinking water, the municipality spent about Rs. 10 lakhs for acquiring trucks and purchasing plastic water tanks for providing water to the town dwellers. To alleviate the problem of shortage of water during lean months the civic body has drawn up a plan of joining feeder pipelines to the existing water pipelines coming from Sepoydhura, Thotey Khola and 8th Mile Khola to boost the supply of

water to the reservoirs. The feeder pipelines will trap water from upper catchments of numerous jhoras, which are flowing towards the Balason river valley.

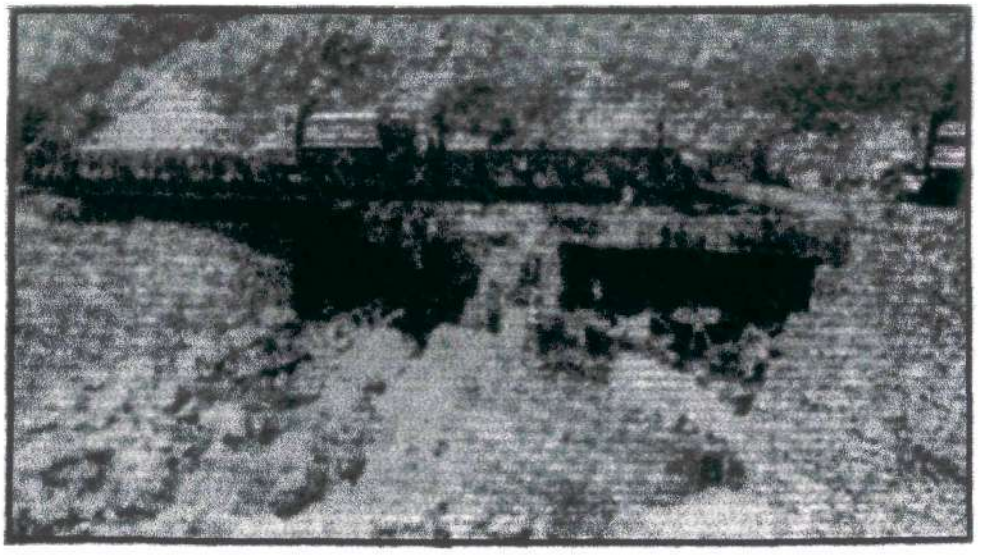
The town doesn't have a proper sewerage system. The old sewer lines are in bad shape and the central septic tank is non-functional. The entire sewerage finds its way to Kanti Jhora without any treatment. This has lead to pollution of jhora water and the settlements mainly of tea gardens lying along the lower course of Kanti Jhora are either forced to use the polluted water or walk long distances to get their daily need of water. The management of Montiviot Tea Garden has apprised the civic body of the problems faced by its workers residing in those settlements. The Municipality has already drawn up a plan to overhaul the sewerage system in the town and for that it had engaged a consultancy firm to provide it with necessary technical know-how. But due to a lack of response from the Department of Municipal Affairs of the Government of West Bengal for the execution of the plan, the suffering of the people living in the lower course of Kanti Jhora will continue.

The Municipality doesn't have an incinerator to dispose off its garbage and it has appealed to the government for providing the necessary funds to set up a modern incinerator. Incineration is the process of reducing combustible wastes to inert residue by burning at high temperatures of 925° to 928° Celsius. At these temperatures all combustible materials are consumed, leaving a residue of ash and non-combustibles occupying only 5-25 percent of the original volume of the refuse. As the proposal is yet to be looked upon by the government, the garbage that is dumped west of Bourdilion Road is burnt in the open by the conservancy staff. A part of the non-burnt garbage and ash finds its way to the nearby jhora, which in turn pollute the water consumed by the villagers living in the lower course of the jhora.

During 1998, landslides devastated a large part of the Darjiling Himalayas. There was loss of life and property and the Hill Cart Road, main arterial road between Darjiling and Siliguri, was at many places breached. A stretch of the Hill Cart Road near Pagla Jhora (Pic. 25) and the bridge across Hussain Khola, north of Kurseong town, were washed away. The Pankhabari Road also suffered from breaches at some points. Goods transportation between Siliguri and Darjiling and Kurseong were hampered as the main arterial road was damaged. Special arrangements were made by the administration to provide minimum supply of ration

Pic. 25 : Landslide across the Hill Cart Road at Pagla Jhora.

to the people by using the Pankhabari Road. On an emergency footing the Indian Army restored the contact between Kurseong and Darjiling by constructing a bailey bridge across Hussain Khola (Pic. 26). Naya Basti in ward I, Tekbir Busti and Abraham Busti in ward II, Devisthan and Kanti Jhoras in ward III, Dhobi Khola, Sherpa Busti and Subedar busti in ward



Pic. 26 : The bailey bridge across Hussain Khola.

V and Rajbari-Ranikoop in ward X in Kurseong town were badly affected by the landslide in 1998. The Municipality received a grant of Rs. 69,00,000/- from the government to overcome the problems created by the landslide. Temporary shelters were provided to the affected families.

To overcome the problem created by landslides in the future, the Government of West Bengal set up a crisis management committee of experts in June 1998 to prepare a guideline for proper handling of the crisis created by landslides and an alternative route from Siliguri to Darjiling and measures to be taken to minimise the occurrences of landslides. They recommended certain long and short-term measures to check landslides and an alternative route in case of disruption of traffic in the Hill Cart Road. The committee has in a recent meeting, given a suggestion of declaring Kurseong a no-development zone. It has also suggested of constructing a weighbridge at Sukna to check and restrict the weight of vehicles plying on the Hill Cart Road.

The Municipality has drawn up a plan to mitigate the problems created by landslides by constructing guide walls along jhoras passing through the town, restricting the construction of houses in the landslide prone areas and construction of shelter houses for the affected families. It has submitted a plan of Rs. 99,00,000/- to the government in 1999 of which the government has sanctioned Rs. 50,00,000/- for that purpose, but the Municipality is yet to receive that sanctioned amount to start its work.

CONCLUSION

Way back in 1977, the Siliguri Planning Organisation gave a conceptual and a future land use plan for Kurseong town for its even development. On the basis of it the town was divided into different zones and specific proposals were given for the development of the different zones. As there was no regulatory authority to follow up the proposals given by the S.P.O., the town has witnessed a haphazard growth. Residential land use has witnessed more growth than any other land uses in the town. Under the different developmental schemes of the central and the state governments meant for the slum and non-slum areas of the town, the municipality has undertaken many schemes for the improvement of physical infrastructures in the town. Most of the schemes are meant for areas with a high concentration of poor families and the work for development of different schemes is under progress.

To overcome the problem of traffic congestion the municipality has fixed certain spots as parking zones for the proper movement of vehicles. To improve the condition of the Sub-

divisional Hospital, the government has taken certain steps like increasing the number of beds to 165, a modern five storied building to accommodate different disciplines and provide better service to the patients, setting up of a morgue, an incinerator, a generator and an ICCU. The P.H.E. has chalked out a plan to augment the supply of drinking water to the town by developing the existing springs, renovation of pipelines, construction of another storage reservoir of 1,81,84,000 litre capacity and tapping jhoras near Chimney and Eagles Crag and pumping that water to the storage reservoirs.

The municipality has decided to recognise private residential schools as commercial enterprises and levy a tax on them. To increase the supply of water the municipality of its own has decided to join feeder pipelines to the existing water pipelines. The government is yet to respond to the proposals given by the municipality for construction of a central septic tank and an incinerator in the town.

CHAPTER VII

SUGGESTIONS AND CONCLUSION

Urbanisation needs to be equated not only with increasing employment in non-agricultural sector and the associated higher technology and income levels but also with urban infrastructure, both economic and social, to promote dispersal of development and the quality of life of the people. Urban development policy is concerned not only with ensuring that urban centres play a positive role in national and regional development but also provide healthy living environments.

In the First Five Year Plan, the problem of urbanisation was equated with the problem of increasing housing shortage in urban areas. The plan recommended that the tendency to inflate land prices and speculation should be controlled through legislation. The Second Five Year Plan endorsed the expansion of the housing programme, and emphasised slum clearance, slum improvement and land acquisition and development. The Third Five Year Plan recognised that housing policies need to be set in the larger context of economic development and industrialisation. The Fourth Five Year Plan included the expansion of urban community development programmes, which were started in the third plan. Exploring new dimension in urban planning, there was serious awareness of planners to spatial implications and problems of urbanisation.

The Fourth Five Year Plan also stressed the need for decongestion and dispersal of population in the metropolitan cities like Calcutta and Mumbai. To finance housing and urban development projects, the plan provided for the establishment of a Housing and Urban Development Finance Corporation. The Fifth Five Year Plan recognised the need for a complex and multifaceted strategy and the thrust of urbanisation policy was to increase the rate of growth of small and medium towns.

The Sixth Five Year Plan placed major emphasis on (a) environmental improvement of slums; (b) integrated development of small and medium towns with a population of less than 1,00,000; (c) urban development programmes; and (d) research and development to provide scientific base for the formulation of urbanisation and urban development policy.

Urban development policies are concerned with a wide range of problems, and the spectrum of problems is wide. The major problems and the associated policies related to the

urban size and growth; growth of slums – housing; urban land development; traffic and transportation; deterioration of urban environment, both physical and social; urban administration; and mobilisation of financial resources for urban development.

It is becoming evident that the tertiary sector, both high income and low income, with its multipliers, is tending to become more important than the industrial sector with its multipliers.

The slum development policies should be both short-term (housing) and long-term (education and improvement of skills). Slums are not just sub-standard houses, but are occupied by people with complexities of social networks, sharp social-economic stratification and segregated spatial structures. The ethnicity and traditional living styles of slum population should be recognised in any slum development programmes. Ownership of land, most of that are private lands, on which the slums are located, poses problems in any programme of rehabilitation and relocation (Prakasarao, 1983).

To meet the goals of urban development policy, there is a need for powerful planning instruments. Some administrators and planners of experience think that the citizen and community participation in urban development programmes could provide the necessary insulation and facilitate successful implementation, and also, modify the plans, where necessary. The State Town and Country Planning Acts provide for inviting suggestions and comments from the public at various stages of the preparation of development plans. The varied ways in which developments are taking place in our towns and cities, whether in the location of residential layouts, shopping complexes, or location of traffic terminals, without any regard to location rationale, only suggest that public consultation either failed in its function or the programmes did not receive the due and appropriate publicity.

Urban planning in India more often follows urban development instead of directing development according to a pre-designed plan. The basic city-planning instrument has become only too static, too defective and too outmoded. What further compounds the problem is the time lag between the formulation of the plan and its implementation.

City and town planning is a science, an art and a movement of policy concerned with the shaping and guiding the physical growth and arrangement of towns in harmony with their social and economic needs (Adams, 1935). Planning today needs a multidisciplinary approach. The planner must understand the existing landscape before he tries to reform it (Freeman, 1967). Regulating the use of land to the best advantage of community should be one of the major objectives of the town plan. The land should be developed in accordance with requirements of the

people living in and around the urban areas so that all utility services and major functions are easily available. The planning authority should be bold enough to obtain legislative measures in order to regulate the non-use of land in a desired way and to create civic centres, market places etc. at proper places. The weakness of information flow, the failure to communicate between earth-scientists and planners and decision-makers, contribute to many of the accentuated environmental hazards in cities. Clearly, sometimes the decision to play down the potential hazards is deliberate as it may be thought preferable to have some houses with slight hazard risk rather than no houses at all. In other cases the risks appear to be ignored or not even considered (Douglas, 1983).

The town plan should also aim at urban development, slum clearance and re-housing where these have already came into existence. The planning should be ecological so that the productive lands and natural beauty are preserved. A particular form of use considered suitable at one time begins to appear as a misuse at other time. Besides taking up some programmes to improve physical infrastructure like roads, drinking water, community latrines and community centres, the Kurseong Municipality has not prepared any master plan for the town and its adjoining areas and such piecemeal planning is not conducive to the healthy development of the town and its adjoining areas. The haphazard development of residential areas is a serious problem. The future land use planning objectives should follow the measures of safety, economics, efficiency, ethnic and aesthetics. Safety includes protection from natural or human dangers, while economics includes the financial security for home, the determination of housing types and sizes for keeping pace with demands of the people. Efficiency consists the facility of getting into and going out of the housing areas such as transportation, shopping, health, education and other services. Ethnic is a policy of fairness in housing, irrespective of race, creed, religion, caste, region or nationality. Aesthetics covers the need of physical senses for the pleasant view, beauty, clean environment protected from noise, dust, vibration and glare etc. (William. H, 1973).

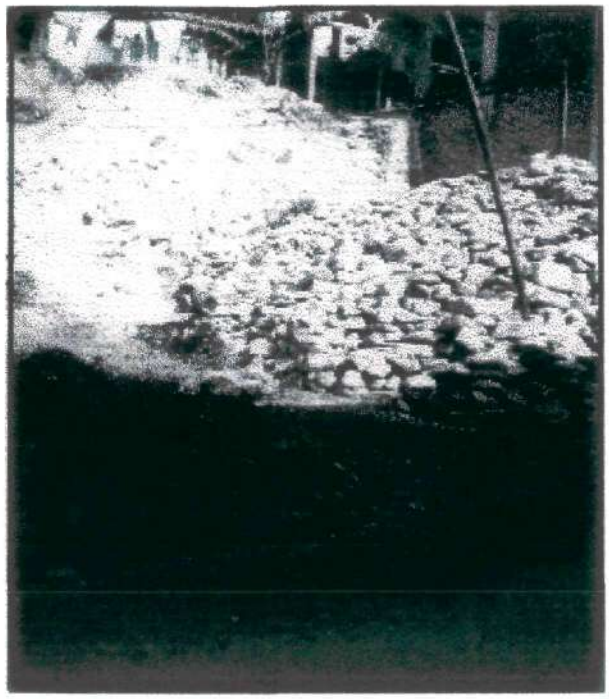
The new residential areas, which came up on private vacant lands and tea gardens, suffer from insufficient infrastructure. Lack of drinking water, sewerage and roads is evident in those localities. Houses have come up on slopes and along the jhoras, which are vulnerable to landslides. Some of the areas were affected in the 1998's landslide. There is a tendency among the house owners to convert their single-storied houses into multi-storied buildings with scant regard to building rules. This tendency has already created a problem of congestion of houses, unhealthy environment and lack of amenities in the Central Business District of the town. The

plan of the municipality to rehabilitate the sweepers from the sweeper's barrack in the centre of the town to a new site is yet to be implemented. With financial assistance from the HUDCO, the municipality built twenty-five 'pay and own' subsidised houses (Pic. 27) for the sweepers near the burning ghat. Even after persuasion, the sweepers are not willing to move to the new site and as such 50 percent of the houses are still lying vacant. There are two reasons for the unwillingness on the part of the sweepers to take possession of the new houses – (a) the new site is far away from the centre of town, and (b) they do not want the monthly instalments of the constructed houses to be deducted from their monthly salaries.

Pic. 27 : Subsidised houses for the sweepers.

Even though the Department of Municipal Affairs of the Government of West Bengal has made special provision of buildings rules for Municipalities in the Hill Areas (Appendix), the Kurseong Municipality is yet to take concrete measures to implement those rules. Due to scarcity of vacant land at the centre of the town, every measure of land is being used for construction purpose by unscientifically cutting the hill slopes (Pic. 28) and not constructing proper guide walls for the cut slopes.

The Central Business District of the town suffers from two basic problems – (a) the national highway and the railway line passes through it and (b) both the wholesale and retail business is carried out from the same premises. Due to the construction of shops on both the



Pic. 28 : Slope excavated for house construction.

sides of the Hill Cart Road and the railway line and encroachment of the road and pavement by vegetable and other vendors, traffic congestion is a common phenomenon. The food grain godown of the Food Corporation of India which was constructed without proper planning creates problem not only for loading and unloading of food grains but also creates traffic jam near the meeting point of Montiviot Road with the Hill Cart Road. The conservative vegetarian population of the town avoids the shopping complex (Pic. 29) constructed by the

Pic. 29 : Entrance of the shopping complex.

municipality because vegetable shops and mutton shops are located side by side on the ground floor of the complex. A part of the *bazaar*, original market area of the town, is still vacant and the rest is covered with temporary shops. The municipality is not able to develop it because it does not have the required finance to take possession of the land from the Department of Land Reforms of the Government of West Bengal. During the last decade private cars for commercial purposes and jeeps have overwhelmingly grown in the town as major means of transport both within the town and outside the town. This has created space constraints for parking of private vehicles along the main roads of the town.

The hilly nature of land in Kurseong town is a major controlling factor for urban growth. As most of the vacant land available in the town has been utilised for different purposes, the town is experiencing either vertical growth in the existing residential areas or encroachment of land belonging to tea gardens or reserved forest lying adjacent to the residential areas. There is a need on the part of the municipality to monitor growth in Naya busty, Tekbir busty, Abraham busty, Debisthan jhora, Kanti jhora, Dhobi khola, Subedar busty, Sherpa busty and Rajbari-Ranikoop areas as these areas were affected by landslides in 1998. Construction of buildings other than single storied ones should not be allowed in those areas and must be strictly enforced. In the other residential areas, the municipality should enforce the building rules as mentioned in the West Bengal Municipal (Building) Rules. The tea garden area lying within the municipal boundary between Ramlal jhora and Kanti jhora, west of Bourdillion Road, can be used for future development of a residential-cum-commercial complex with some government offices. Commercial area of the town is already congested and needs thinning out and as the proposed area is easily accessible, proper planning of that area will help in easing the problem of congestion in the centre of the town.

There is a need to set up a regulatory body to oversee the growth of English medium schools in the town. Even though to start a secondary school the school's owner has to procure a 'no objection certificate' from the state government, there is no control over the starting up of kindergarten and primary schools. The schools including the secondary schools lack in playgrounds and spacious classroom and the main objective behind setting up of the schools seems to make profit rather than providing basic facilities to the students. As Kurseong town's economy is at present thriving on the growth of numerous English medium schools, equilibrium has to be maintained regarding the quantity and quality of these schools. It is heartening to note that the Department of School Education, Government of West Bengal is preparing a legislation

based on the Ashoke Mitra panel's recommendation of formulation of regulations to control the growth of private primary schools and kindergartens and ensure imparting of quality education in such institutions (The Telegraph, 2nd February 2000). The decision taken by the municipality to recognise private English medium schools as commercial enterprises is a step in the right direction as that will help in increasing the revenue of the municipality. But modalities are yet to be chalked out regarding the amount to be levied on the private schools. The municipal authority and owners of private English medium schools should sit together to formulate a policy for assessment of taxes because an understanding between the two will help in the growth of Kurseong town in the right direction.

The *hat bazaar* area lying between the Hill Cart Road and the Burdwan Road, which once belonged to the Maharaja of Burdwan, is a case of misuse of land in the town. The legal tussle regarding the ownership of the land has hampered the growth of the prime land. The land can be best utilised by converting it into a multi-utility three-storied complex. The ground floor of the complex can accommodate the already existing shops and a part of it can be reserved for parking of vehicles. The first floor can be reserved for offices and a few shops and the second floor can have an auditorium and an exhibition hall.

The gas shop selling liquefied petroleum gas, located in the congested commercial area must be shifted to a less dense area. The centre of the town, which was destroyed in a devastating fire in 1986, will be badly affected if a fire of that nature occurs again because over the years the central area has become highly congested with business establishments and houses.

Tuberculosis, the most unglamorous killer, which was thought to have been disappeared, has made a frightening comeback and in 1993 the World Health Organisation declared it as a global emergency. Even though a new cost effective strategy, called the directly observed treatment short course is available for treating tuberculosis, the disease is killing more people today than at any other point of history. In India alone about 5,00,000 people die of tuberculosis every year and this number is on the rise. Given the infrastructure available at the State Tuberculosis Hospital (Sanatorium), the area under its jurisdiction and the number of staff working here, the hospital can be managed in a much better way than it is done now. The Darjiling Gorkha Hill Council has given a proposal to the Government of West Bengal for the take over of the administration of the hospital. As the number of patients reporting to this hospital has been decreasing, there is need to change the status of the TB Hospital. The hospital can be

changed into a referral hospital providing specialised treatment in different disciplines to patients not only from the hills but also from the plains. In this manner the existing buildings can be utilised in the best possible way and if needed there is enough land under its jurisdiction for expansion.

The measures taken by the administration to regulate the flow of traffic along the Hill Cart Road and Acharya Bhanu Path has yielded some results but the crux of the problem lies somewhere else. Unless and until the new Bus Terminus is utilised by shifting the present Bus and Taxi stands to the terminus, the problem of congestion of the Hill Cart Road and the Acharya Bhanu Path will remain. The shifting of the stands will definitely hamper the business interests of the hotels and restaurants and other shops but for the greater interest of the town this action has to be taken by the administration. The shifting of the stands will also help in the completion of construction of the Bus Terminus. When completed the Bus Terminus will provide facilities of various types to the travellers. The gas shop can be shifted to the terminus because of its proximity to the fire station. There is a need to develop a cheaper mode of transport for carrying passengers from the terminus to the centre of the town and vice versa and for delivery of gas cylinders to the users in different parts of the town.

Parks, open spaces and playgrounds serve as the lungs of the city. Every urban area has to have a rational and homogenous distribution of public parks, open spaces and recreational facilities. Even though Kurseong town is surrounded with green belt, there is only one public park within the town and one in Dow Hill maintained by the Department of Forest. The Ministry of Defence should hand over the Chandmari playground to the State Government for the construction of a modern indoor stadium, which is lacking in the town. The land adjoining '*the grotto*' in the St. Mary's, east of the town, can be developed into a children's park.

The DHR owns properties at prime locations not only in Darjiling and Kurseong but also at other railway stations along its route. These properties can be utilised in the best possible way for supplementing the income of the railways in this section. As the volume of traffic which ply through the Hill Cart Road has increased tremendously, a conservative estimate purs it at 30,000 per day, the level of pollution in the atmosphere has also increased and people residing along both the sides of the road complain of increased dust and smoke released by the passing vehicles. Atmospheric lead is one such pollutant, which tend to be greatest where density of vehicular traffic is the highest. Although there is controversy as to how important the lead in the air is for the total lead in people's bodies, the exposure to dense traffic fumes has led the Government of

India to legislate the sale of lead free petrol all over the country. The Department of Motor Vehicles should be more vigilant in undertaking smoke emission tests of motor vehicles especially the jeeps and trucks plying through the main roads.

The use of plastics for carrying goods and packaging, which has increased over the years, needs to be curbed. After the devastating landslide in the Darjiling hills in 1998, a small news item of banning the use of plastics came out in the local newspapers. The news created awareness among the shopkeepers and the people in general to use less of plastics but when it was realised that there was no government order as such, the use of plastics for different uses again increased. This small incident reminds one thing that if any action is taken administratively or politically for the betterment of the environment, the people are willing to accept it, provided viable alternative measures are recommended.

The volume of liquid and solid wastes in cities is great. The success with which a city can manage these wastes is one indicator of the ability of the organisation within a city to work together to manage the urban environment. There is no single best solution to waste disposal. A range of alternatives is available, with the most sophisticated technology not always appropriate in every city (Douglas, 1983). The following proposals can be made for proper management of liquid and solid wastes –

(a) Liquid waste:

(i) pour flush community latrines should be provided for the economically weaker section who have no latrine facility at present;

(ii) existing septic tanks (community and individual types) are to be desludged and structures are to be repaired and renovated;

(iii) existing septic tanks are to be provided with either soak pit or bleaching powder vat;

(iv) new septic tanks are to be constructed to cater the additional load coming to the existing community septic tanks;

(v) all sewer lines are to be made free from blockage, repaired and provided with suitable junction pits;

(vi) a common septic tank should be constructed and arrangement for safe disposal of effluent from the septic tank is to be made by constructing soak pit or porous pipe is to be laid from the septic tank for effluent to disperse in the sub-soil.

(b) Solid Waste:

(i) the total solid waste generated in the town is about 8 tons and to attend to this amount of solid waste the municipality requires a good infrastructure. About 255 community vats of 0.25 m3 capacity will be required for collection of solid wastes and about 13 central vats each having a capacity of 6 m3.

(ii) the average spacing between two community vats should be 100 metre but will vary depending on spatial distribution of population;

(iii) each vat shall receive solid waste from 125 persons daily and should be cleared every alternate day;

(iv) a trailer or a central vat will receive solid wastes from 20 community vats.

(v) residential schools, hotels and auditoriums will have separate individual vats;

Despite tremendous prospects, Kurseong has not developed as a major tourist destination. The natural advantages of a congenial climate and elevation, lush green forests and tea plantations over slopes and ridges, magnificent vistas of the plains formed by tropical vegetation and meandering rivers, amidst the panoramic setting of ice-clad peaks, make this tiny Himalayan hill station unique among its class. As Kurseong's importance as a recreational resort has declined, steps should be taken to revive it. Stress should be on developing eco-tourism especially on the Dow Hill-Mahaldiram mountain range. The range can be used for trekking, camping, hiking, picnicking, rock-hounding, bird watching and a host of activities allied to it. The forest museum, orchid house and the service reservoir at Dow Hill in the tranquillity of deep pinus forest makes this spot one of the attraction for the tourist visiting Kurseong.

A few kilometres away on the same ridge through a magnificent forest mainly Crytomaria Japonica, Chimney is another beautiful place noted for its scenic beauty. From here one can get the glimpses of the eastern Himalayas and the majestic view of Mt. Kanchenjunga. This curious name of this place is due to the fact that in the olden days when this was the regular road to Darjiling, there was a dak bungalow at this spot, of which only a single chimney now remains.

About 10.5 Kilometres from Dow Hill, Bagora is a wonderful forest village from where a number of forest road radiate. There is a forest bungalow where trekkers can take rest. The trail along the Old Military Road can be used for trek during the night to Tiger Hill especially on a moonlit night. From Tiger Hill one can have a magnificent view of the snowy Himalayan peaks

and of the very colourful sunrise. The adventure of trekking through a thick mass of temperate forest, a varied topography, climatic conditions, flora and fauna offers education and scenic values which are comparable to the best of the pony or trekking trails anywhere in the world. A number of jhoras with crystal clear waters in the backdrop of snow-clad mountains offers beautiful camping grounds all along the trail.

About 11 kilometres west of the town is the Namsi Lake on the Balason River, which is an important spot for fishing trout. This gorge of the Balason is a magnificent site with steep hills rising on both side and the river flowing though it. With the bungalow offering camping facilities for the right enthusiastic tourists can trek their way to Mirik, the lake town of Darjiling Hills.

Kurseong town, which grew up as a halting station for tourists and troops travelling to Darjiling, was declared a municipality in 1879 covering an area of 5.05 sq. km. A skeleton drinking water and sewerage system was developed catering to need of the centre of the town. The salubrious climate of the town attracted several government offices and educational institutions. The growth of population in the town, which was very slow till 1981 suddenly, increased in 1991. This sudden increase in population was partly due to natural increase and partly due to immigration. The town did not experience any establishment of industries other than tea manufacturing industries. Thus it can be concluded from the first two chapters that due to the establishment of offices and schools rather than industries in the town the proportion of workers in the tertiary sector is very high, the sex ratio is 913 females per 1000 males and literacy rate one of the highest in the State.

It has been observed that the functions, particularly residential, commercial and transport are inter-related and affects the land use in Kurseong town. The commercial use of land is closely related to the centre of population and is found near the centre of the town. The density of population has been found to decrease outwards from the centre of the town. The residential areas have grown in the centre of the town and in Rajbari, Sherpa Busty, Dumaram and Sudhapa Tol areas. Transport and communication constitutes the second most important use of land after residential land uses. Public and semi-public land uses are scattered and found all over the town. Thus it can be concluded that although there is sectorial development of land uses in Kurseong town yet their distribution and character changes as one goes away from centre of population.

The different socio-economic functions available in the town are not only used by the people of the town but are also used by the neighbouring areas. The growth of private English

medium schools, where students from different parts of the country and neighbouring countries come to study, has helped in the generation of employment. Trades and commerce have developed in the town but have remained concentrated at the centre. Volume of road traffic has increased at the expense of railways. Facilities like drinking water and sanitation are yet to serve the entire population of the town. Thus it can be concluded that the social infrastructure available in the town needs improvement to serve the people in a better way.

Any urban area, which grows without proper planning, suffers from many problems and Kurseong town is one such urban area. The rapid increase in population in the last decade has led to the growth of bustys where houses are sub-standard and living condition is poor. Different land uses in the town have grown in an unbalanced manner where more stress was given to the development of residential areas and less on parks and playgrounds. The medical facilities need to be revamped to serve the growing population in a better way. Existing facilities are not sufficient to supply drinking water on a regular basis during lean months and sewerage, which is discharged untreated into the jhoras, is creating environmental problem to the settlements lying in the lower course of the jhoras. Thus it can be concluded that the infrastructure, which were developed for a small population, could not keep pace with the growing population and have created disparity in its distribution within the town.

Kurseong town did not experience the desired development in different land uses due to a lack of response to the conceptual plan provided by the Siliguri Planning Organisation in 1977. Even though the municipality has taken up many programmes for development of physical infrastructures in the town, implementation of the programmes is still at a rudimentary stage. The Departments of Health and P.H.E. have taken up programmes to improve the medical facilities and to increase the supply of drinking water respectively. The plans taken up by many agencies, if executed, will go a long way in lessening the problems faced by the town.

The broad set of goals prepared by the Land Conservation and Development Commission at Oregon in 1973 (Douglas, 1983) gives the right direction for the development of Kurseong town in a proper manner. The goals are:

(i) public participation in planning;

(ii) establishment of a long-use planning process with a data base to include natural resources, man-made structures, population and economic characteristics, and the roles and responsibility of government;

(iii) maintenance and improvement of air and water quality;

(iv) control of development in natural hazard areas;

(v) development of buildings, roads and services;

(vi) delineation of boundaries to separate urban and potential urban areas from rural land.

BIBLIOGRAPHY

Abrams, C 1964 : Man's Struggle for Shelter in an Urbanising World : An Adaptation. Bombay : Vakils, Feffer and Simons.

Adams, T. 1935 : Outline of Town and Country Planning.

Ataullah, Md. 1985 : Urban Land : Its Use and Misuse. Delhi : Amar Prakashan.

Bartholomew, H. 1955 : Land uses in American Cities. Cambridge Massachusetts : Harvard University Press.

Baxter, R. and Williams, I. 1978 : Population forecasting and uncertainty at the National and Local scale. Oxford : Pergamon Press Ltd.

Berry, B.J.L. *et el* 1963 : Urban Population Densities, Structure and Change. Geographical Review, 53.

Bhardwaj, R.K. 1974 : Urban development in India. Delhi : National Publishing House.

Bhardwaj, S.M. and Harvey M.E. 1975 : Occupational Structure of Scheduled Castes and General Population of Punjab. NGJI, Vol. XXI.

Bose, Ashish 1973 : Studies in India's Urbanisation 1901-1971. Delhi : Tata McGraw-Hill Publishing Co. Ltd.

Breese, Gerald 1963 : Urban Development Problems in India. Annals of the Association of American Geographers, 53. pp. 253-65.

Census of India 1951 : District Handbook, Darjiling District, West Bengal.

Census of India 1961 : District Census Handbook, Darjiling District, West Bengal.

Census of India 1971 : District Census Handbook, Part X-A and B Darjiling District, West Bengal.

Census of India 1981 : District Census Handbook, Part XIII-B Darjiling District, West Bengal.

Census of India 1991 : District Census Handbook, Part XII-B Darjiling District, West Bengal.

Chapin, F.S. 1957 : Urban Land use Planning. New York : Harper. Cloval, P. 1974 : Elements de Geographic Humaine. Paris : Genin.

Chapin, F.S. 1965 : Urban Land Use Planning (second edition). New York : Harper.

Clark, J.I. 1977 : Population Geography. New York : Pergamon Press Ltd.

Collins, M.P. 1965 : Field Work in Urban Areas in Chorley R.J. and Haggett P., ed., Frontiers in Geographical Teaching. London : Methuen.

Dash, A.J. 1947 : Bengal District Gazetteers : Darjiling.

Dickinson, R.E. 1964 : City and Region : A Geographical Interpretation. London : Routledge and Kegan Paul.

Douglas, Ian 1983 : The Urban Environment. London : Edward Arnold.

Dozey, E.C. 1922 : A Concise History of the Darjeeling District Since 1835 With A Complete Itinerary of Tours in Sikkim and the District. Varanasi : Jetsun Publishing House.

D'souza, A 1978 : The Indian City : Poverty, ecology and urban development (ed.). New Delhi : Manshar Publications.

D'souza, A. 1983 : Urban growth and urban planning : Political context and people's priorities. New Delhi : Indian Social Institute.

Ghosh, B.N. 1985 : Fundamentals of Population Geography. New Delhi : Sterling Publishers Private Limited.

Ghosh, M. 1981 : Functional classification and hierarchy of settlements in North Bengal. North Bengal University : Ph.D. thesis (unpublished).

Gowda, K.S.R. 1972 : Land use Pattern in Urban Areas in Proceedings of the 21st IGU Symposium on Urban Land use, 1968. Calcutta : National Committee for Geography.

Government of West Bengal 1980 : West Bengal District Gazetteers – Darjiling. Calcutta : Government Press.

Gupta, G.R. 1983 : Urban India (ed.). New Delhi : Vikash Publication House.

Hall, R.H. 1975 : Occupations and Social Structures. New Jersey : Prentice-Hall Inc. Eaglewood Cliffs.

Hooker, J.D. 1854 : Himalayan Journals, 2 Volumes. London.

Jana, M.M. 1975 : Decennial growth and functional characteristic of urban areas in Midnapur district. Calcutta : Geographical Review of India, Vol. 37, No. 4.

Jana, M.M. 1976 : Land utilisation of a part of Barasat town. Calcutta : Geographical Review of India, Vol. 38, No. 4.

Jana, M.M. 1978 : Hierarchy of market centres in Lower Silabati Basin. Calcutta : Geographical Review of India, Vol. 40, No. 2.

Jana, M.M. 1987 : Spatial distribution of educational institutions in Lower Silabati Basin and their role in literacy. Indian Journal of Landscape Systems and Ecological Studies, Vol. 10, No. 2.

Jana, M.M. 1989 : The characteristics and growth of population in the hills and the plains of Darjiling district. Calcutta : Geographical Review of India, Vol. 51, No. 4.

Jana, M.M. 1990 : Population planning and regional development in India. Allahabad : Chug Publications.

Jana, M.M. 1992 : Environmental degradation and developmental strategies in India. New Delhi : Ashis Publication.

Jana, M.M. 1994 : Planning in perspective of development. New Delhi : M.D. Publications Private Ltd.

Jana, M.M. 1995 : Human interference in the environmental degradation of Darjiling Himalayas in Eco-degradation of Himalayas – Causes and remedies (ed.) Kaul, B.C. Jammu : Vinod Publishers and distributers.

Lahiri, Manosi 1984 : British Influence on Indian Urbanisation. Geographical Review of India, volume 46, September 1984 No. 3, pp. 19-28.

Lama, S. 1994 : Urban geomorphology of Darjiling town. North Bengal University : Ph.D. thesis (unpublished).

Mallet, F.R. 1874 : On the Geology and Mineral Resources of the Darjeeling District and the Western Duars. Memoir, G.S.I. 11(1), pp. 1-72.

McGee, T.G. 1971 : Urbanisation Process in the Third World. London : G. Bell and Sons Ltd.

Mitra, N. 1991 : Role of urban centre in the development of regional economy of North Bengal. North Bengal University : Ph.D. thesis (unpublished).

Mondal, R.B. 1982 : Land Utilisation. New Delhi : Concept Publication Company.

Murphy, R.E. 1974 : The American City : an urban geography. 2nd Edition. New York : McGraw Hill.

Nag, P.K. *et el* 1997 : Geography and environment Vol. I, II and III (ed.). New Delhi : Concept Publishing Company.

Negi, J.S. 1982 : Environmental problem in the Himalaya. Dehradun : Bishen Singh Mahendra Pal Singh.

Northam, R.M. 1979 : Urban Geography. New York : John Wiley and Sons.

O' Malley, L.S.S. 1907 : Bengal District Gazetteers – Darjeeling. Calcutta : The Bengal Secretariat Book Depot.

Payne, G.K. 1977 : Urban housing in the Third World. London : Leonard Hill.

Peach, G.C.K. 1970 : Urbanisation in India, p. 297 in Beckinsale, R.P. and Housten, J.M. (eds.) : Urbanisation and its Problems. Basil : Blackwell.

Prakasarao, V.L.S. 1983 : Urbanization in India : Spatial Dimensions. New Delhi : concept Publishing Company.

Ramkumar, R. 1986 : Technical Demography. New Delhi : Wiley Eastern Ltd.

Ram, L.N. 1969 : Impact of Population Growth on Land in Bihar in Essays in Geography, Dass, K.N. ed. Bhagalpur : Bhagalpur University.

Raza, M. and Habeeb, A. 1976 : Characteristics of Colonial Urbanisation : A Case Study of the Satellite Primacy of Calcutta (1850-1921), p. 185 in Alam, S.M. and Pokshishensky, V.V. (eds.) : Urbanisation in Developing Countries. Hydrabad: Osmania University.

Roy, S. 1945 : Notes on the Geology of a portion of the Darjeeling Himalayas (abstract). Pr. Ind. Sci. Congr. Ass., 32nd Session. Part 3, 59.

Saha, P. 1991 : Problems and prospects of development of Siliguri and Jalpaiguri Towns : A comparative study. North Bengal University : Ph.D. thesis (unpublished).

Sarkar, D.K. 1988 : Small and medium town development in West Bengal : A study of selected towns of North Bengal. North Bengal University : Ph.D. thesis (unpublished).

Singh, A.K. 1985 : Population and Settlement in U.P.: A Geographical Analysis. New Delhi : Inter India Publications.

Singh, H.H. 1972 : ~~Kanpur~~ Kanpur : A study in Urban Geography. Varanasi : Indrani Devi, Banaras Hindu University.

Singh, J.P. 1979 : Urban Land use Planning in Hill Areas. A Case Study of Shillong. Delhi : Inter-India Publications.

Singh, J.S.1983 : Environmental regeneration in Himalaya : Concepts and strategies (ed.). Nainital : Central Himalayan Environment Association.

Singh, R.L. 1964 : Bangalore : An Urban Survey. Varanasi : Tara Publications.

Singh, R.L.(ed.) 1973 : Urban geography in developing countries : Proceedings of IGU symposium No. 15 Varanasi November 22-29, 1968. Varanasi : National Geographical Society of India.

Singh, S. 1992 : Urban planning and development: Issues and imperatives. New Delhi : Ashis Publishing House.

Sinha, B.N. 1970 : Sirsi : An Urban Study in Application of Research Models. Dharwar : Karnataka University.

Smith, T.L. 1948 : Population Analysis. New York : McGraw Hill Book Company.

Stamp, L.D. 1962 : The Land of Britain: Its use and misuse. London : Longman.

Strahlar, A.N. 1957 : Quantitative Analysis. Bulletin Geological Society of America, 68 pp. 913-920.

Taylor, G. 1961 : Urban Geography. Study of site, evolution, pattern and classification in villages, towns and cities (2nd revised edition). London : Methuen and Co. Ltd.

Thirlwall, A.P. 1987 : 'Studies in Population and Economic Development' in The Population Problem, Ghosh B.N. (ed.). Delhi : Deep and Deep Publications.

Trewortha, G.T. 1972 : A Geography of Population : World Patterns. New York : John and Sons, Pregaman Press.

Upadhayay, S.B. 1992 : Urban Planning. Jaipur : Printwell.

Vink, A.P.A. 1975 : Land use in Advancing Agriculture. New York.

Webster, D.H. 1958 : Urban Planning and Municipal Public Policy. New York : Harper and Brothers.

Wenthworth, C.K. 1950 : A Simplified Method for Determining the Average Slope of a Land Surface. American Journal of Science, 20, pp. 184-194.

WHO Scientific Group 1972 : Development of Environmental Health Criteria for Urban Planning. World Health Organisation Technical Report Series 511, 35 pp.

William H. Claise 1973 : Handbook on Urban Planning.

William H. Ludlow 1966 : Urban Reasearch Meathod (ed.) Gibbs, J.P.

Yadav, C.S. 1979 : Land use in Big Cities. Delhi : Inter India Publications.

APPENDIX I (a)

Questionnaire for schools

1. Name of the School :
2. Year of establishment :
3. Localition :
4. Ward no. :
5. Status of the School :Kindergarten/Primary/Junior/ Secondary/Higher Secondary.
6. Medium of instruction : English/Nepali/Bengali/Hindi.
7. Type of School : Day/ Boarding.
8. Area of the School Compound :
9. Type of building : wooden/ Concrete.
10. Total number of students :
    Day Scholars: Boys / Girls
    Boarders: Boys / Girls
11. Classification of students according to their permanent address:
    a) Kurseong town-
    b) Three hill subdivisions of Darjiling District-
    c) West Bengal (other than mentioned in a and b)-
    d) Other states: Bihar /Assam / Sikkim
    e) Other Countries: Bangladesh / Nepal / Bhutan
12. Total strength of the staff :
    Teaching – Male / Female
    Non- teaching – Male / Female
13. Educational Qualification of the teaching staff

	Male / female	Teaching degree Mont./ T.T.C. / B.T./ B.Ed.
a) Class X level -		
b) 10+2 level -		
c) B.A./B.Sc/B.Com.-		
d) M.A./ M.Sc./ M.Com. –		

14. No. of teachers staying in the school compound :
    Not staying in the school compound :
15. Classification of teachers according to their permanent address:
    a) Kurseong town :
    b) Within the District :
    c) Other districts of West Bengal ;
    d) Other states : Assam / Bihar /Sikkim / Kerala
    e) Other countries : Nepal /

APPENDIX I (b)

Name of the head	
Ward No.	
No. of family members	Male / female
Economic status	Above poverty line / below poverty line
Year of migration	
No. of children	Boys / girls
Educational status	Head
	Other members male / female
No. of earning members	Male / female
Source of earning	Government service male / female
	Private service male / female
	Business male / female
Condition of building	Floor earthen / brick / cemented / wooden
	Roof plastic / corrugated G.I. sheets / asbestos / concrete
	Wall earthen / wooden / stone / brick
Source of water	Individual connection / public hydrant / jhora
Sanitary condition	Private latrine / community latrine / open defecations

APPENDIX I (c)

Name of the office	
Location / ward no.	
Year of establishment	
No. of staff	total male / female
Status of staff	technical / non-technical / clerical
Place of origin	plains / hills
Place of residence	within the municipality / outside the municipality
No. of quarters, if any	

APPENDIX II (a)

Census abstract – 1971.

Ward	Area of town in sq. km	No. of occupied Residential houses	No. of household	Total population including Institutional and houseless Population		
	5.05			Person	Male	Female
I		83	212	1,431	754	677
II		102	177	951	479	472
II		133	339	1,834	899	935
IV		82	258	1,309	653	656
V		68	206	948	487	461
VI		88	222	1,131	672	459
VII		74	197	1,088	589	499
VIII		86	292	1,190	654	536
IX		91	220	1,340	698	642
X		125	315	1,632	698	642
XI		111	280	1,741	982	759
XII		141	369	1,830	1,004	826
Total	5.05	1,184	3,087	16,425	8,705	7,720

APPENDIX II (b)

Census abstract – 1991.

Ward	Area of town in sq. km	No. of occupied Residential houses	No. of household	Total population including Institutional and houseless Population			Total population in the age group(0-6)		
	5.05			Person	Male	Female	Person	Male	Female
I		327	335	1,729	916	813	174	93	81
II		270	275	1,570	806	764	139	69	70
II		503	512	3,722	1,823	1,899	361	168	193
IV		312	320	1,807	940	867	162	81	81
V		387	395	2,229	1,176	1,053	263	139	124
VI		173	180	1,215	704	511	118	62	56
VII		177	183	1,298	668	630	111	54	57
VIII		418	425	2,594	1,387	1,207	295	131	164
IX		548	554	3,409	1,774	1,635	381	186	195
X		535	548	3,099	1,720	1,379	267	136	131
XI		329	336	1,758	899	859	149	79	70
XII		453	462	2,328	1,176	1,152	221	118	103
Total	5.05	4,432	4,535	26,758	13,989	12,769	2,641	1,316	1,325

Contd.

Census – 1971

Ward	Scheduled Castes		Schedule Tribes		Literates		Total worker		Cultivator		Agricultural labour	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
I	99	50	18	11	519	427	316	41	14	-	5	-
II	59	48	35	34	322	245	144	33	-	-	-	-
III	43	56	7	13	672	569	354	75	1	-	-	-
IV	100	1210	43	55	384	287	234	58	-	-	-	-
V	72	58	55	54	229	164	189	33	-	-	-	-
VI	40	19	10	28	464	233	292	34	-	-	-	-
VII	72	66	32	27	447	294	228	44	-	-	-	-
VIII	55	39	30	26	505	357	277	27	-	-	-	-
IX	117	113	35	45	377	253	283	65	-	-	-	
X	83	98	41	40	596	437	323	44	1	-	-	-
XI	82	56	69	62	639	346	399	112	3	1	-	-
XII	108	87	29	23	574	263	420	101	-	-	-	-
Total	930	810	404	418	5,728	3,875	3,459	667	19	1	5	-

Census – 1991

Ward	Scheduled Castes		Schedule Tribes		Literates		Total worker		Cultivator		Agriculture labour	
	Male	Fema	Male	Female	Male	Female	Male	Female	Male	Fem	Male	Female
I	115	82	33	33	719	550	351	83	-	-	-	-
II	91	84	75	64	644	498	229	72	3	-	-	-
III	182	167	39	45	1,570	1,473	535	191	1	-	-	-
IV	109	104	55	80	749	642	359	101	-	-	-	-
V	151	131	260	244	829	682	498	85	1	-	-	1
VI	63	64	40	31	578	396	337	41	-	-	-	-
VII	103	80	90	94	562	441	284	57	-	-	-	-
VIII	130	119	82	84	1,136	882	482	96	--	-	-	-
IX	300	291	126	145	1,404	1,092	727	195	-	-	1	1
X	182	167	74	74	1,390	1,041	580	98	1	-	-	-
XI	88	80	46	48	654	520	351	119	-	-	-	-
XII	121	107	30	40	985	772	509	156	-	-	-	-
Total	1,635	1,476	950	982	11,220	8,989	5,242	1,294	6	-	1	2

Contd.

Census - 1971

Ward	Livestock, forestry ,hunting Plantations orchards and Allied activities		Mining and Quarrying		Manufacturing, Processing, servicing and repairs in house hold industry		Manufacturing, Processing, servicing and repairs in other house hold industry		Construction	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
I	351	1	-	-	8	-	10	1	17	-
II	2	-	-	-	-	-	22	-	3	-
III	12	-	-	-	-	-	17	1	16	-
IV	2	-	-	-	-	-	20	1	14	1
V	2	1	-	-	1	-	10	-	4	-
VI	-	-	-	-	-	-	81	-	-	-
VII	2	-	-	-	-	-	12	-	-	-
VIII	4	-	-	-	-	-	39	-	2	-
IX	2	-	-	-	-	-	19	-	3	-
X	9	1	-	-	-	-	25	2	8	-
XI	28	45	-	-	20	-	18	1	12	2
XII	32	35	1	-	-	-	51	1	9	-
Total	130	83	1	-	29	-	324	7	88	3

Census - 1991

Ward	Livestock,forestr ,huntingPlantatio orchards and Allied activities		Mining and Quarrying		Manufacturing, Processing, servicing and repai in house hold industry		Manufacturing, Processing, servicing and repai in other than house hold industry		Construction	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
I	41	-	-	-	-	-	1	-	15	-
II	6	4	-	-	-	-	19	-	8	-
III	5	-	-	-	-	2	73	-	35	2
IV	8	-	-	--	-	7	2	36	4	16
V	14	5	-	-	5	-	72	1	27	-
VI	2	-	-	-	-	-	49	-	3	-
VII	1	-	-	-	6	-	21	3	2	-
VIII	4	1	-	-	1	-	77	4	4	-
IX	-	-	-	-	3	-	87	9	83	18
X	13	1	-	-	-	-	75	2	66	4
XI	41	48	-	-	3	1	33	-	12	1
XII	87	72	-	-	36	-	29	2	12	-
Total	222	131	-	-	63	4	572	25	283	26

Contd.

Census – 1971

Wards	Trade and Commerce		Transport, Storage & Communications		Other services		Non-workers	
	Male	Female	Male	Female	Male	Female	Male	Female
I	28	1	41	3	158	35	438	636
II	19	-	38	17	60	16	335	439
III	27	4	156	20	125	50	545	860
IV	50	4	34	7	114	45	419	598
V	32	4	54	11	85	17	298	428
VI	124	18	20	2	67	14	380	425
VII	137	19	39	6	38	19	361	455
VIII	75	5	61	3	96	19	377	509
IX	72	12	67	5	120	48	415	577
X	40	2	156	15	84	24	511	754
XI	32	2	77	32	209	29	583	647
XII	61	15	75	12	191	38	584	725
TOTA	697	86	818	133	1,347	354	5,246	7,053

Census - 1991

Wards	Trade and Commerce		Transport, Stor & Communicati		Other services		Marginal worke		Non-workers	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
I	8	4	8	-	278	79	3	-	562	730
II	19	3	21	-	153	64	37	3	540	689
III	42	14	66	5	311	169	-	-	1,288	1,708
IV	59	5	27	2	206	88	-	-	581	766
V	79	9	28	2	272	67	-	-	678	968
VI	135	22	28	2	120	17	-	-	367	470
VII	140	28	16	-	98	26	-	1	384	572
VIII	135	17	30	2	231	72	12	1	893	1,110
IX	233	39	50	2	270	126	1	-	1,046	1,440
X	106	8	82	3	237	80	-	-	1,140	1,281
XI	63	-	12	1	187	68	-	-	548	740
XII	48	8	30	1	267	73	1	-	666	996
TOTAL	1,067	157	398	20	2,630	929	54	5	8,693	11,470

Contd.

APPENDIX III (a)

Concentration Index

Wards	% of total area	1971		1981		1991	
		% of total popn.	A-P/2	% of total popn.	A-P/2	% of total popn.	A-P/2
I	18.59	8.71	4.94	5.6	6.5	6.46	6.07
II	6.59	5.79	0.4	5.57	0.51	5.87	0.36
III	7.24	11.17	-1.97	12.93	-2.85	13.91	-3.34
IV	2.00	7.97	-2.99	7.22	-2.61	6.75	-2.38
V	4.79	5.77	-0.49	7.87	-1.54	8.33	-1.77
VI	0.78	6.89	-3.06	5.12	-2.17	4.54	-1.88
VII	0.62	6.62	-3.0	5.87	-2.63	4.85	-2.12
VIII	6.81	7.24	-0.22	8.04	-0.62	9.69	-1.44
IX	9.62	8.16	0.73	10.94	-0.66	12.74	-1.56
X	7.9	9.94	-1.02	11.0	-1.55	11.58	-1.84
XI	10.17	10.6	-0.22	9.11	0.53	6.57	1.8
XII	24.89	11.14	6.88	10.71	7.09	8.7	8.1
Total			25.92		29.26		32.66

APPENDIX III (b)

Index of population growth.

Year	District (Urban)	District (Urban- hill)	Kurseong town
1901	100	100	100
1911	114.89	114.89	124.73
1921	134.17	134.17	144.22
1931	203.24	174.88	166.73
1941	271.88	222.86	201.28
1951	441.64	289.82	262.23
1961	676.09	370.06	300.07
1971	842.39	386.71	367.53
1981	1318.9	556.57	402.95
1991	1851.35	758.86	598.75

APPENDIX IV (a)

LAND USE PATTERN (in percent) – 1977

Ward	Residential	Commercial	industrial	transport & communication	public utilities	public semi public	open space	Agriculture	Vacant	Forest
I	6.18	-	-	4.27	0.4	6.17	2.1	-	26.75	54.13
II	19.39	-	0.86	4.51	0.38	5.98	0.52	-	25.75	42.61
III	37.7	0.24	-	7.31	1.95	5.49	5.08	-	42.23	-
IV	37.15	1.9	-	6.5	5.2	26.35	1.2	-	21.7	-
V	23.48	1.0	-	5.61	1.48	0.58	0.23	16.29	51.33	-
VI	15.49	40.38	-	9.07	6.0	13.68	-	-	15.37	-
VII	19.2	55.68	-	16.78	0.93	2.1	-	-	5.31	-
VIII	16.7	2.49	0.11	8.68	0.71	0.76	1.16	44.21	25.18	-
IX	12.91	0.78	0.31	4.46	1.79	2.15	0.66	60.96	15.98	-
X	20.32	1.15	-	5.15	0.47	3.53	1.47	40.55	27.36	-
XI	9.49	0.34	0.35	7.39	0.88	3.54	0.25	61.85	15.91	-
XII	11.27	0.15	0.25	6.51	0.79	2.87	2.32	57.51	18.33	-
Ave	15.03	1.17	0.19	5.99	1.01	4.22	1.69	33.46	24.37	12.87

APPENDIX IV (b)

LAND USE PATTERN (in percent)- 1999

Wards	*Residential*	*Commercial*	*Industrial*	*Transport & commercial*	*Public utility*	*Public & semi-public*	*Open space*	*Agriculture*	*Vacant*	*Forest*
I	7.33	-	-	4.27	0.4	6.17	2.1	-	25.98	53.75
II	35.34	0.17	-	4.51	0.38	11.7	0.52	-	4.77	42.61
III	72.26	0.92	-	7.31	3.71	5.38	5.08	-	5.34	-
IV	50.01	4.4	-	6.5	5.2	26.35	1.2	-	6.34	-
V	48.79	3.69	-	6.54	1.48	2.49	0.23	16.29	20.49	-
VI	15.49	44.61	-	9.07	6.0	13.68	-	-	11.14	-
VII	19.2	57.67	-	16.78	0.93	2.1	-	-	3.31	-
VIII	35.59	6.57	0.11	8.68	0.71	3.67	2.51	41.02	1.14	-
IX	26.79	2.09	0.31	4.46	1.79	5.06	0.66	51.82	7.02	-
X	46.96	3.8	-	5.15	1.5	3.68	1.95	36.97	-	-
XI	21.72	1.18	0.35	7.39	1.13	3.89	2.78	57.88	3.7	-
XII	23.4	0.59	0.25	6.51	1.83	4.18	2.32	47.41	13.51	-
Average	29.24	2.26	0.14	6.04	1.5	5.54	2.08	29.16	11.24	12.8

APPENDIX V (a)

Variation in intensity of land use in 1977.

Type of land use	Distance in Kilometer					
	0- 0.5	0.5- 1.0	1.0- 1.5	1.5- 2.0	2.0- 2.5	2.5- 3.0
Residential	21.30	20.28	12.62	5.78	8.88	2.10
Commercial	26.83	20.35	12.67	6.08	-	-
Industrial	27.05	20.45	12.90	6.68	-	-
Transport and Communication	34.91	24.68	18.46	13.55	18.38	6.13
Public Utility	36.86	25.41	19.44	15.04	-	-
Public and Semi-Public	40.00	30.82	25.89	15.94	21.38	7.01
Open Space	40.65	32.66	27.62	18.73	24.63	-
Agriculture	78.92	60.71	48.97	36.86	85.13	86.69
Forest	-	70.14	82.71	56.38	-	-
Vacant	100.00	100.00	100.00	100.00	100.00	100.00

APPENDIX V (b)

Variation in intensity of land use in 1999.

Type of land use	Distance in kilometer					
	0- 0.5	0.5- 1.0	1.0- 1.5	1.5- 2.0	2.0- 2.5	2.5- 3.0
Residential	41.52	40.25	22.99	14.14	17.63	6.30
Commercial	49.49	40.35	23.69	15.24	17.76	-
Industrial	49.71	44.58	-	15.84	-	-
Transport and Communication	57.79	46.83	29.25	22.71	27.26	10.33
Public utility	59.74	62	30.23	24.40	-	-
Public and Semi- public	64.78	52	38.83	28.28	30.26	11.21
Open space	65.43	55.70	40.56	30.07	33.51	-
Agriculture	37.25	78.76	60.51	43.92	90.63	86.69
Forest	-	87.95	94.25	63.44	-	-
Vacant	100.00	100.00	100.00	100.00	100.00	100.00

APPENDIX VI (a)

English Medium Schools in Kurseong town.

S. No.	Year of Establishment	Ward	Status of the schools	Medium of instruction	Total no. of students	No. of day scholars		No. of boarders	
						Boys	Girls	Boys	Girls
1	1970	XI	Junior	English	92	30	16	33	13
2	1993	XI	Primary	English	30	10	3	15	2
3	1993	X	Primary	English	70	40	20	5	5
4	1995	XII	Primary	English	54	4	11	25	14
5	1985	IX	Junior	English	170	89	21	45	15
6	1889	III	Secondary	English	572	-	215	-	357
7	1982	XI	Primary	English	191	50	20	90	31
8	1980	XI	Junior	English	35	2	1	29	3
9	1995	IX	Secondary	English	20	5	10	5	-
10	1982	XI	Junior	English	283	72	15	172	24
11	1992	IX	Junior	English	86	22	10	40	14
12	1979	IX	Secondary	English	176	-	36	110	30
13	1973	X	Primary	English	722	200	119	250	153
14	1997	V	Primary	English	85	17	9	48	11
15	1983	IV	Secondary	English	486	223	180	67	16
16	1879	I	Secondary	English	464	25	120	36	283
17	1985	V	+2	English	482	160	121	103	98
18	1194	VIII	Primary	English	47	4	2	27	14
19	1994	V	Junior	English	77	25	15	30	7
20	1978	III	Secondary	English	1030	370	280	210	170
21	1991	XII	Junior	English	75	6	5	44	20
22	1990	XII	Secondary	English	376	70	-	306	-
23	1879	I	Secondary	English	257	53	-	204	-
24	1976	I	+2	English	210	90	70	20	30

Contd.

Continued.

S. No.	Places of origin of students							
	Kurseong town	District	West Bengal	Bihar	Assam/ Sikkim	Banglade sh	Bhutan	Nepal
1	46	5	15	21	4	1	-	-
2	13	-	7	6	2	--	-	2
3	45	10	6	2	-	-	-	7
4	15	-	-	9	4	-	-	26
5	110	-	5	7	35 / 1	5	1	6
6	215	40	150	90	40 / 10	-	-	27
7	70	-	-	72	25	12	-	12
8	3	-	32	-	-	-	-	-
9	15	-	-	-	5	-	-	-
10	87	-	66	80	25	2	-	23
11	32	-	9	10	-	-	-	35
12	36	-	39	11	7	72	3	8
13	319	-	150	100	60	50	-	43
14	26	23	14	9	2	11	-	-
15	403	-	-	40	18	-	-	25
16	145	35	156	100	16	4	-	8
17	228	18	65	10	9 / 1	29	81	41
18	6	-	-	22	-	10	-	9
19	38	-	5	3	-	25	-	6
20	660	60	110	35	15 / 10	45	3	92
21	11	12	30	5	3	5	-	9
22	71	20	80	100	70	15	-	20
23	49	33	72	80	15	5	-	3
24	160	12	20	-	1	-	3	14

Contd.

Continued.

S. No.	No. of teaching staff		Places of origin of teaching staff					Qualification			No. of Non-teaching staff	
	Male	female	Kurseong town	District	West Bengal	Other states		U.G.	Graduate	P.G.	Male	Female
1	2	12	14	-	-	-	-	1	13	-	1	6
2	2	3	3	-	2	-	-	2	3		3	2
3	2	7	9	-	-	-	-	1	6	2	2	5
4	7	7	13	-	1	-	-	1	12	1	5	6
5	5	9	14	-	-	-	-	2	11	1	4	6
6	3	23	14	-	12	-	-	4	12	10	-	-
7	3	16	14	2	3	-	-	14	5	-	7	13
8	3	2	5	-	-	-	-	5	-	-	2	1
9	3	5	8	-	-	-	-	-	8	-	2	1
10	2	20	9	-	7	1	5	10	10	2	7	8
11	7	8	14	-	1	--	-	1	12	2	3	6
12	10	9	11	2	4	2	-	1	7	11	14	12
13	15	51	15	-	35	-	-	42	5	3	2	1
14	4	8	8	3	1	-	-	-	11	1	8	4
15	7	15	19	-	1	2	-	-	22	-	3	3
16	-	20	7	4	9	-	-	-	12	8	40	17
17	12	14	24	-	1	-	1	4	11	11	26	11
18	3	4	7	-	-	-	-	3	4	-	2	3
19	3	10	10	2	1	-	-	4	8	1	5	3
20	14	30	35	3	5	1	-	6	33	5	38	23
21	4	5	9	-	-	-	-	2	7	-	1	5
22	18	12	8	2	10	-	10	2	25	3	31	10
23	15	2	4	4	8	1	-	-	2	15	49	9
24	5	4	8	1	-	-	-	1	5	3	1	-

APPENDIX VI (b)

Vernacular medium schools in Kurseong town.

S. No.	Year of Establishment	Ward	Status of the schools	Medium of instruction	No. of students		Origin of students		No. of teaching staff		Origin of teaching staff			Qualification			No. of non-teaching staff	
					Male	Female	Sub-division	Outside subdivision	Male	Female	Town	District	Outside district	Under graduate	Graduate	Post graduate	Male	female
1	1944	III	Secondary	English	-	734	√	-	1	19	16	4	-	-	17	3	3	1
2	1937	II	Secondary	English	1647	-	√	-	26	3	29	-	-	-	20	9	4	2
3	1958	V	Secondary	Bengali	-	85	√	-	-	7	4	1	2	-	5	2	-	1
4	1948	IV	Primary	Nepali	-	125	√	-	-	6	5	1	-	4	2	-	-	-
5	1943	VI	Higher Secondary	Nepali/ English	1050	131	√	-	27	3	22	6	2	-	15	15	8	1
6	1935	IV	Primary	Nepali	136	-	√	-	2	4	6	-	-	2	4	-	-	-
7	1905	IV	Secondary	Nepali	20	500	√	-	-	11	8	3	-	-	6	5	2	1
8	1972	V	Higher Secondary	Nepali	469	124	√	-	13	5	18	-	-	-	11	7	3	1
9	1955	X/XI	Junior + Secondary	Nepali	-	1339	√	-	-	35	30	5	-	17	12	6	2	6
10	1960	VIII	primary	Nepali	35	17	√	-	-	3	3	-	-	3	-	-	-	-

APPENDIX VII

Status of houses, drinking water and sanitations of the Kurseong town.

Ward	Type of houses			Status of drinking water			Status of sanitation		
	Pucca	Semi-pucca	Kutcha	Individual connection	Public hydrant	Jhora water	Private latrine	Community latrine	Open defecation
I	3.04	96.96	-	27.34	58.23	14.43	44.81	43.54	11.65
II	11.34	81.3	7.35	30.67	6.09	63.23	59.24	23.11	17.65
III	10.14	32.5	57.36	79.72	16.25	4.03	70.28	26.25	3.47
IV	36.18	59.83	3.99	58.97	27.63	13.39	54.98	45.02	-
V	11.68	81.64	6.67	13.76	14.6	71.63	36.86	22.67	40.47
VI	26.22	67.56	6.22	58.22	40.44	1.33	59.56	40.00	0.44
VII	36.61	55.12	8.27	48.11	27.55	23.63	59.45	32.28	8.27
VIII	41.78	53.78	4.44	39.71	49.18	11.11	68.74	27.7	3.56
IX	23.35	71.73	4.92	28.13	37.13	34.74	58.36	29.54	12.1
X	43.36	50.5	6.114	27.2	63.17	9.65	85.97	12.4	1.63
XI	13.36	77.28	9.35	52.56	42.31	5.12	70.16	18.26	11.58
XII	37.33	57.66	5.04	31.35	4.86	63.78	57.48	36.57	5.95
Average	24.7	63.78	11.52	39.26	32.5	28.25	61.75	27.57	10.68

APPENDIX VIII

Status of poor families.

Var	Family size			Educational status			Floor			Walls			Roof			Drinking water			Sanitation			Total no. families
	< 4	4 – 6	> 6	Above primary	Primary	Illiterate	Brick/ cement	Stones	Earthen	Brick/ stone	Woodeen	Earthen	Tin	Asbestos	Tarpaulin	Individual connection	Public hydrant	Spring water	Private	Community	Open defecation	
	2	2	8	3	6	3	2	9	1	5	6	1	11	1	-	-	3	9	-	2	10	12
I	1	2	7	1	6	3	1	7	2	3	6	1	7	2	1	-	4	6	1	2	7	10
II	14	21	47	12	29	41	3	71	8	26	48	8	78	2	2	2	70	10	11	48	23	82
V	16	4	5	7	12	6	4	20	1	20	5	-	19	5	1	1	22	2	6	19	-	25
/	17	18	51	1	9	76	5	66	15	56	9	21	52	13	21	2	14	70	-	5	81	86
/I	4	9	13	3	8	15	8	18	-	21	5	-	21	3	2	6	20	-	3	22	1	26
/II	13	21	19	11	9	33	21	32	-	45	8	-	48	4	1	5	48	-	4	30	19	53
/III	21	23	27	5	6	60	15	53	3	51	15	5	69	1	1	6	12	53	8	42	21	71
X	22	34	28	8	19	57	24	51	9	57	18	9	75	5	4	7	25	52	8	31	45	84
;	17	31	17	12	33	20	12	4	13	37	21	7	56	6	3	4	29	32	9	44	12	65
I	15	23	12	8	15	27	6	36	8	31	12	7	39	6	5	10	28	12	2	7	41	50
II	11	17	11	6	26	7	10	22	7	20	13	6	32	4	3	3	9	27	3	7	29	39
`ota	153	205	245	77	178	348	111	425	67	372	166	65	517	42	44	46	284	273	55	259	289	603

APPENDIX IX (a)

Construction works in slum areas for physical infrastructures.

S. No.	Item	Unit	NSDP				BMS				10th Finance				ILCS				Total			
			Target		Achievement		Target		Achievement		Target		Achievement		Target		Achievement		Target		Acievement	
			Phy	Fin (Lakhs)	Phy	Fin (Lakhs)	Phy	Fin (lakhs)	Phy	Fin (lakhs)	Phy	Fin (lakhs)	Phy	Fin (lakhs)	Phy	Fin (lakhs)	Phy	Fin (lakh)	Phy	Fin (lakhs)	Phy	Fin (lakhs)
1	water supply a) pipipe line	M	4,000	11.5	1200	5.0	3000	9.00	200	0.8	-	-	-	-	-	-	-	-	7000	20.5	1400	5.8
	b) water taps	No.	120	10	30	3.2	60	2	12	0.6	-	-	-	-	-	-	-	-	180	12.0	42	3.8
	c) Platform	No.	120	4	-	-	60	2	20	0.66	-	-	-	-	-	-	-	-	180	6	20	0.66
2	Community Bath	No.	24	4.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	4.8	-	-
3	Individual latrine	No	-	-	-	-	-	-	-	-	-	-	-	-	736	42.27	691	26.07	736	42.27	691	26.07
4	Community latrine	No	24	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	12	-	-
5	Garbage pit	No	120	9.6	10	0.75	-	-	-	-	-	-	-	-	-	-	-	-	120	9.6	10	0.75
6	Roads a) Black top	Sq.m	14,000	21	600	1.5	12,000	18	1,200	3	-	-	-	-	-	-	-	-	26,000	39	1800	4.5
	b) Concrete	Sq.m	24,000	48	1010	6.1	12,000	24	470	1.64			966	1.75	-	-	-	-	36,000	72	2446	9.49
7	Drains	M	6000	15	175	5.62							470	1.41	-	-	-	-	6000	15	2220	7.03
8	Sewer/ jhora	M	5000	20	-	-	-	-	-	-	-	-	720	3.04	-	-	-	-	5000	20	720	3.04
9	Street light	No	120	9.6	3	0.3	-	-	-	-	-	-	-	-	-	-	-	-	120	9.6	3	0.3
10	Culvert	No	12	12	-	--	-	-	-	-	-	-	1	0.72	-	-	-	-	12	12	1	0.72
11	Health care center	No	12	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	6	-	-
12	Shelter	No	120	20	-	-	60	11	-	-	-	-	-	-	-	-	-	-	180	31	-	-
13	Primary school building	No	-	-	-	-	6	6	-	—	-	-	-	-	-	-	-	-	6	6	-	-
14	Water Reservoir	No	24	4.8	-	-	24	4.8	-	-	-	-	1	0.57	-	-	-	-	48	9.6	1	0.57
15	Total *(Financial)*	-	-	208.3	-	22.47	-	76.8	-	6.7	-	-	-	7.49	-	42.27	-	26.07	-	327.37	-	62.73

Number of man-days generated 12,483.

APPENDIX IX (b)

Construction works outside slum area for physical infrastructures.

S. No.	Item	Unit	BMS				10th Finance				Total			
			Target		Achievement		Target		Achievement		Target		Acievement	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Water supply a) Pipe line	M	1000	3	-	-	4000	18	850	3.68	5000	21.0	850	3.68
	b) Water taps	No.	10	0.4	-	-	120	4	10	0.6	`130	4.4	10	0.6
	c) Platform	No.	10	0.2	-	-	120	2.4	10	0.4	130	2.6	10	0.4
2	Community Bath	No.	-	-	-	-	12	7.2	-	-	12	7.2	-	-
3	Community latrine	No	-	-	-	-	12	12	-	-	12	12.0	-	-
4	Garbage pit	No	-	-	-	-	60	2.4	-	-	60	2.4	-	-
5	Roads a) Bituminous	No	6000	6	2000	1.86	10000	9	3000	2.79	16000	15	5000	4.65
6	Drains 1 m wide	Sq. m	-	-	-	-	6000	20	-	-	6000	20	--	-
7	Sewer/ jhora	M	-	-	-	-	9000	40	-	-	9000	40	-	-
8	Street light	M	-	-	-	-	60	4.8	--	-	60	4.8	-	-
9	Community center	No	-	-	-	-	6	6	-	-	6	6	--	-
10	Health care center	No	-	-	-	-	6	3.6	-	-	6	3.6	-	-
11	Primary school building	No	2	8	-	-	2	8	-	-	4	16	-	-
12	Shelter	No	10	1	-	-	-	-	-	-	10	1	-	-
13	Office building extension	No	-	-	-	-	1	16	-	1.17	1	16	-	1.17
14	Parks	No	-	-	-	-	2	10	-	-	2	10	-	-
15	Community hall	No	-	-	-	-	2	8	-	-	2	8	-	-
16	culvert		-	-	-	-	10	10	-	-	10	10	-	-
	Total (Financial)	-	-	18.6	-	1.86	-	181.4	-	8.64	-	200.0	-	10.5

APPENDIX X

West Bengal Municipal (Building) Rules.

Part XI, Special Provision for Municipalities in the Hill Areas.

156. Criteria of using a piece of land as a building site –

(1) No piece of land shall be used as a building site, unless the Board of Councillors is satisfied that –

(a) the site of such building abuts an all weather public street or a private street/footpath and is, not less than 1.50 metres wide at any part, duly sanctioned and constructed. No building shall be erected so as to deprive any other building or building site;

(b) the site is at least 100 sq. metres in area;

(c) the land is capable of being well drained by means of drainage facilities leading to the existing public drainage channel or natural jhora;

(d) the site is reasonably secured from danger from hillside slips from above, below or the sides;

(e) the soil (rocks, boulders, laterite etc.) of the site is likely to sustain the construction of a building thereon; and for sites with inclination of 30° and above or for proposed building above 6.5 metres in height or 500 sq. metres in coverage, such sustainability shall be justified, at the cost of the applicant, by prior testing of soil and certification of stability of slopes and buildings conforming to the relevant codes of Bureau of Indian Standards including – IS 12070, IS 13063 and IS 14243 (Parts I and II);

(f) the site does not contain any portion which forms a component of the open spaces prescribed under the regulations for any other building or building site thereof;

(g) no part of the land is located within 200 metres from the boundary of a sinking or probable slip zone, designated in a meeting by the Board of Councillors;

(h) no piece of land is located within 5 metres in any direction of the outside edge of water courses;

(i) adequate drainage measures and protection work shall be taken by the applicant at his own cost if it is located on the permanent shadow zones of ridges and spurs;

(j) where the site is within 5 metres of any side of a tank, water reservoir, jhora/natural spring, water source of natural drain or within two metres from either side of water pipe, sewer line and/or other underground utilities, the owner shall take such measure at his own cost, which shall prevail any risk of damage and/or landslide thereto by construction of such buildings;

(k) no piece of land shall be used as building site if it is located on the permanent shadow zones of ridges and spurs as identified by the Board of Councillors to be inadequately sunlit so as to make it unfit for human habitation;

(2) No piece of land located in Central business area as determined by the Board of Councillors or in sinking zone or areas of distress with cracks caused by subsidence and/or slides or any other areas identified by Board of Councillors, with reasons to be recorded in writing, shall be used as a building site without prior approval of the State Government.

(3) No piece of land where a closed, sick or other industry was located or in operation, shall be used as a site for construction of any building, other than an industrial building, without the prior approval of the competent authority appointed under clause (d) of section 2 of the Urban Land (Ceiling and Regulation) Act, 1976 (33 of 1976).

157. Application for approval of sites and for permission to construct or reconstruct buildings other than huts –

(1) Before submission of the building plan, approval of the building site has to be obtained. The municipality shall consider the building plan submitted for approval only after the site plan is approved.

158. Sub-division of plots –

(1) No sub-division of any plot within the municipal area shall be undertaken without the prior approval of the Board of Councillors;

(2) Generally –

(a) sub-division shall not be allowed if the mother plot abuts an all weather means of access having a width of less than 2 metres for plots having area less than 500 sq. metres;

(b) these rules shall not apply to a scheme for Economically Weaker Section and Low Income Group Housing approved by the Government;

(c) no permission for sub-division of a plot of land shall be granted unless each sub-divided plot is at least 100 sq. metres in area;

(d) no sub-division of plot shall be granted unless a detailed lay out plan of the area is submitted before the municipality duly integrating the site layout plan with the general use of the land in the adjoining areas.

159. Preparation of plan and supervision of execution of work –

(1) every owner who intends to erect, re-erect, add to or alter any building, shall get is plan prepared and structural work designed and supervised by an architect/licensed building surveyor as required under Rule 160.

160. Engagement of technical personnel –

(1) Every person who intends to erect, re-erect, add to or alter any building shall, subject to the provision of the Act and these rules, engage –

(a) for all buildings up to 6.50 metres in height a technical person not below the rank of a licenced Building Surveyor for planning, design and construction of the building foundation and superstructure and for all buildings above 6.50 metres but below 13.50 metres in height, a licenced building surveyor and/or an architect and a structural engineer and a geo-technical engineer for conducting soil and other tests as required under rule 156(f), planning, design and construction of the building foundation and superstructure;

(2) The licenced building surveyor, the architect, the structural engineer and the geo-technical engineer will work in association with one another and will be individually and/or collectively responsible for ensuring the safety of the building structure and its foundation.

161. Permissible height of building –

(2) The maximum permissible height of a building as well as its permissible floor area shall be regulated by the width of the surrounding open space in the same holding plus the width of its means of access, depending on the type of building use per the table below:

	width of means of access plus		width of front open space	
	upto 3.0 m	3.0-5.0 m	5.0-7.5 m	above 7.5 m
Floor Area Ratio (F.A.R.)				
Residential	1.0	2.0	2.5	2.75
Commercial, Public & other uses	1.0	1.5	2.0	2.5
Maximum permissible height	4.5 m	6.5 m	11.5 m	13.5 m

Provided that in case a building is more than 11.50 metres in height prior approval of the State Government is required to be obtained.

162. Ground coverage –

The maximum permissible ground coverage for buildings

	Plot size		
	100-400 sq. m	400-1200 sq. m	Over 1200 sq. m
Maximum permissible ground coverage:			
Residential & Education uses	70 %	60 %	50 %
Commercial, public & other uses	60 %	50 %	40 %

163. Open spaces for buildings –

(2) The minimum front, rear and side open spaces shall be provided along the entire faces/sites of the building as given in the table below:

Minimum width of open spaces in metres	Front	Rear	Side
Residential and educational uses	1.5 m	1.5 m	1.5 m
Commercial, Public and other uses	2.5 m	3.5 m	3.5 m

(3) Notwithstanding anything contained elsewhere in this rule in the case of a building with septic tank, a side open space of 2.1 metres shall be provided on any side of the building for the provision of the said septic tank.

164. Access, circulation and parking – (1) Every plot shall abut a means of access which may be a public street or private street or passage, the minimum width shall be as specified in rule 156(1)(b).

(2) Buildings such as theatre, motion picture house, auditorium or exhibition hall shall not be allowed on a plot located within 50 metres of the junction of 2 streets.

165. Drainage measures – (1)(b) An effective slope and drainage system shall be maintained at all times on the developed ground after slope cutting or filling, during and after development as per this rule on any site.

(2) (a) Proper slope, not less than 1: 60 shall be maintained all around a building for quick drainage of the entire plot as provided in rules 156 and 164.

(2) (c) Except with the written permission of the Board of Councillors, no covered drain shall be constructed and no existing open drain shall be covered in.

(3) (a) Septic tank and soak pits shall be located so as to be easily accessible from the means of access to the plot.

166. Protective work – (1) The cutting of slopes in the creation of steps and terraces for development work shall be carried out while ensuring the stability of excavation to provide for the safety of the buildings located and constructed there on in accordance with provisions in the BIS Codes.

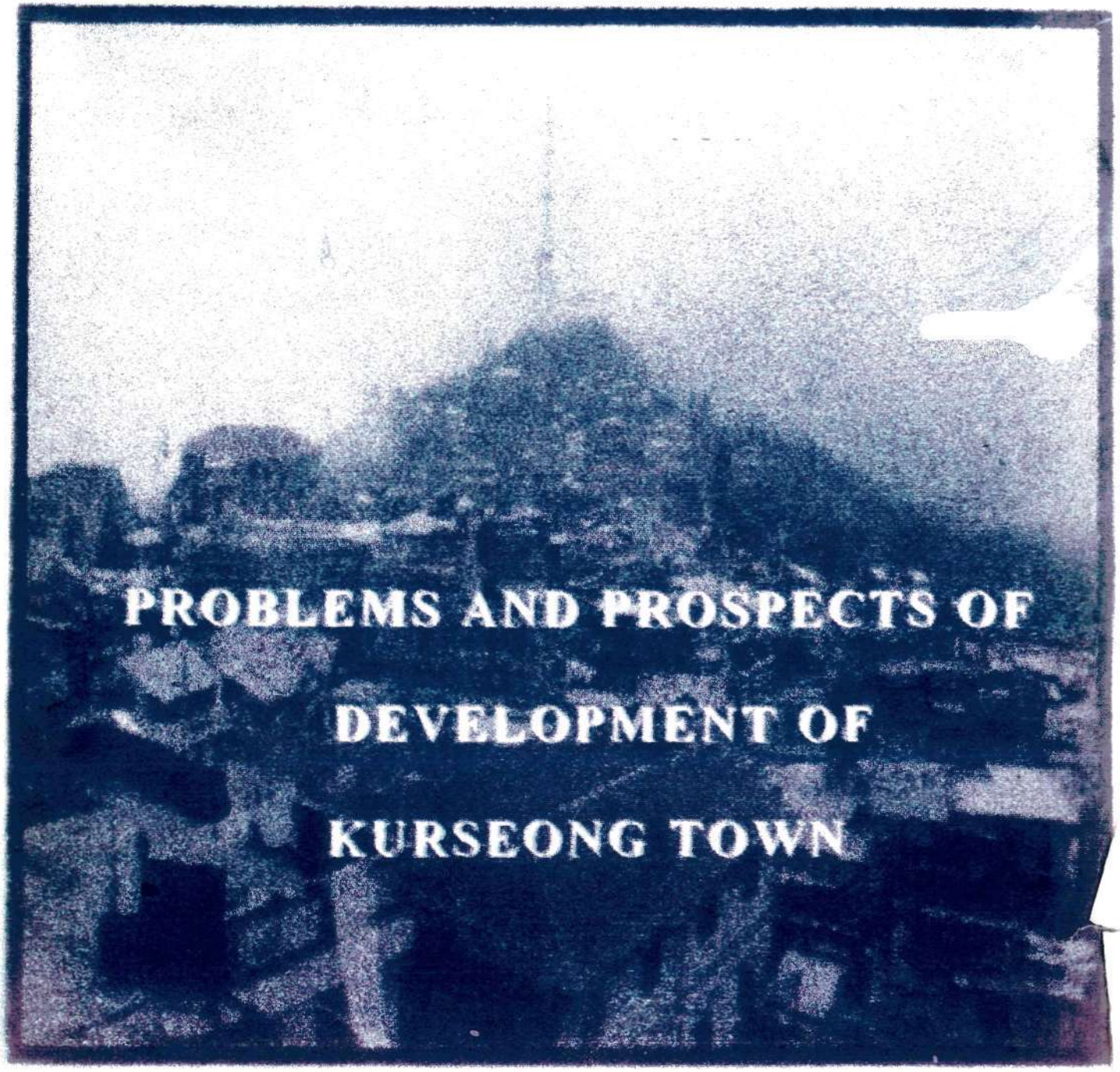
(4)The foundation of every protection wall must be taken down to original and firm soil or rock, have a bed line cut at right angles with the face of the wall and a slope of 3:1 towards the hill side. No structure shall be allowed to be raised from the top of the retaining / protective wall. Weep holes shall be provided in breast wall and retaining walls equipped with graded filter for proper drainage at intervals of 1.2 metres horizontally and vertically, beginning from 0.2 metre above ground level.

167. Special conditions – (1)(a) Additions to existing buildings shall only be permitted in the case of structurally sound structures.

(2) In the case of multiple buildings in a plot, open space shall be set aside as specified in for the purpose of public and community activity.

(4) The foundations of all buildings, parts must rest on solid ground or rock and have width and depth suitably designed in accordance with relevant codes of practice of BIS. The depth below the ground level shall not be less than 2 metres in the case of RCC column footings and 1.2 metres in the case of all other foundations.

(11) The municipality may decide the widths of buffer zone upslope and down slope of National Highways and State Highways where no new construction or addition / alteration to any exiting structures or change of use will be allowed.



PROBLEMS AND PROSPECTS OF DEVELOPMENT OF KURSEONG TOWN

THESIS SUBMITTED BY

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