

STUDY OF URBAN MORPHOLOGY AND LEVEL OF SOCIO-ECONOMIC CONDITION OF JALPAIGURI TOWN

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THE UNIVERSITY OF NORTH BENGAL.

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TO WHOM IT MAY CONCERN

I am pleased to certify that Sm. Dipanjana Chakraborty is known to me for the last seven years as a student and thereafter as a research Scholar. She worked under me for her Ph. D. Thesis on "*Study of Urban Morphology and Level of Socio-economic Conditions of Jalpaiguri Town*". It is an original work based on primary and secondary data those were collected through field survey. She is sincere and methodical in her work. She bears good moral character.

I wish her success in her future life

Date: 5.10.2007


5.10.07
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Supervisor

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PREFACE

Man a social creature, for his living existence requires some social facilities and scope for cultural activities especially when he is in an urban society. Several amenities, services are essential for the urban dwellers to satisfy some of their basic needs. In any urban center municipal authorities try to promote all types of urban amenities and utility services to residents, which is not sufficient.

Jalpaiguri emerge as a Divisional Head Quarters in 1869 and was declared as a Municipal town in 1885. The town grew very rapidly upto, but after independence the development of this become sluggish. The study seeks some basic reasons, those are responsible for its slow growth of development. The study hints to some proposals for the solution of several problems coming across the town.

The study has been designed into nine chapters preceded by an 'Introduction'. The introductory part of the work is devoted to identify the location of the town, it deals with the purpose, objectives of the study and methodology used for studies and lastly the design of the thesis. Chapters I deal with the historical development of the town.

In Chapter II, the relief, drainage, vegetation & climatic condition of Jalpaiguri town has been studied.

Chapter III. deals with population characteristics such as population structure, and its composition, its density pattern, growth etc. Literacy rate and occupational structure of the people are also discussed in this chapter.

Chapter IV is devoted to the study of urban morphology and major land use pattern, their characteristics and distribution in the town have been discussed in this chapter. The changes of land use during 1992-2007, and the direction of change have also been discussed in this chapter.

In Chapter V different socio-economic amenities and their characteristics in the town, have been studies in detail with special emphasis on educational and medical institutions, trade, commerce transport & communication systems, and living conditions of the people.

Chapter VI is devoted to analysis the functional and spatial gaps in the town with the help of statistical analysis of data collected from field survey.

Chapter VII try to deal with different problems associated with land, people, infrastructural problems and environmental problems. It is followed by chapter VIII that throws some lights on the formulation of strategies for development. It also helps to examine and analysis of the previous plans prepared by carious authorities, and recent plans, for the future development of town.

In the ninth Chapter summarizing the problems and some suggestions has been mentioned for their development in future.

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GLOSSERY

Buranji	-	A chronical of Assam King
Raja	-	King
Zamindar	-	The large land holder
Dewan	-	The high-placed employee of a king or nabwab.
Nawab	-	The Muslim Ruler
Jotes	-	Rent free land
Faujdari	-	Magisterial jurisdiction
Kutchary	-	Court
Bazar	-	Market Place
Ghat	-	Place at riverside
More	-	Road Junction/Crossing
Kuncha	-	Unmetalled
Pucca	-	Metalled / Cemented
Van	-	Open air moveable platform with there wheels

ABBREVIATION

C.C.D	-	Central Business District
M.G. Road	-	Mahatma Gandhi Road
D.B.C Road	-	Deshbandhu Chittaranjan Road
U.K.M	-	Kilometre
L.P.G.	-	Liquified Petrol cum Gas
M.	-	Metre
No.	-	Number
O.P.D	-	Out door Patient Department
P.S	-	Police Station
P.W.D	-	Public Works Department
Rs	-	Rupees.
O.D.P	-	Outline Development Plan
S.J.D.A	-	Siliguri-jalpaiguri Development Authority
S.J.P.A	-	Siliguri-Jalpaiguri Planning Area
U.U.P	-	Uttarbangya Unnayan Parshad

INTRODUCTION

STUDY AREA

Jalpaiguri Municipality an administrative head quarters of the district is situated on the west bank of river Tista at 26°32' N and 88° 43'E in West Bengal. The name Jalpaiguri might be associated with Jalpesh, the Lord Siva. Hooker and Revel (1788) both mentioned the town as 'Jelpigory'. Jalpaiguri town is limited on the south, west and north by Kharia mauza (J.L. No 7) of Jalpaiguri Police Station in Jalpaiguri district, and by river Tista to the east. Jalpaiguri has immense importance as border town, locating at most sensitive area near Bhutan, Bangladesh and Nepal. So the study of this town is necessary from national point of view(Fig 1).

BACKGROUND OF THE STUDY:-

Raja Dharma Deva Raikat (1709-1724) shifted his capital to the present Jalpaiguri town (Rajbari). The district of Jalpaiguri as administrative units come into being on the 1st January 1869, and the Municipal Administration was first introduced in 1885 in Jalpaiguri town. From 1874 to 1910, more than 150 tea gardens were come up in the district and attracted people from the other parts of the country. The town has gradually become a great center of business, services, culture and religion. Modern transport systems were introduced different places of Jalpaiguri by 'North Bengal State Railways' and 'Bengal Duars Railways' in 1878 and 1896 respectively. The municipal works were conducted by an institution called Jalpaiguri 'Union Board' (Sanyal. C. 1969). In 1969, Jalpaiguri Municipality consist of only 7 wards, But later due to the fragmentation of the words, these number has been increased from 7 to 19 in 1980. In 1995 there were 25 wards in Jalpaiguri Municipality.

Jalpaiguri town is covered with alluvial deposits, as it is situated on the Tista flood plain and characterized by flatness. While the general slope of the town is from north to south, the embankments along River Tista and Karala have altered the natural slope of the town, and are responsible for many hazards particularly water logging.

LOCATION MAP OF JALPAIGURI TOWN

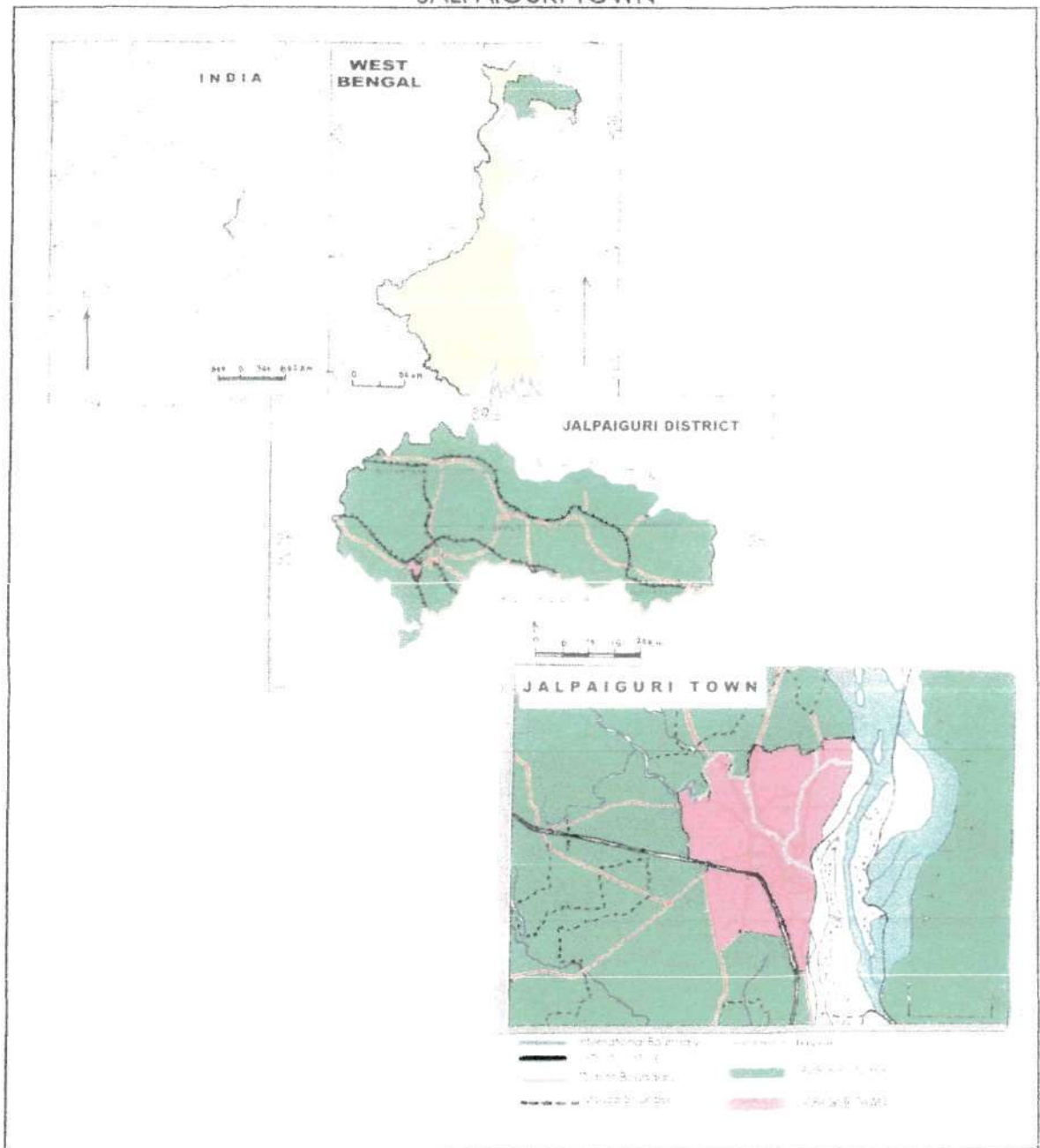


Fig - 1

Jalpaiguri town is situated on the west bank of river Tista and the entire town area is drained by the Tista and its tributaries i.e, Karala, Dhardhara, Rukruka, Chukchuka and Gadadhar, the last one is the tributary to the river Panga. The climatic condition of Jalpaiguri town is of wet monsoon type, characterized by heavy rainfall and cold winter. But the total numbers of annual rainy days have decreased recently with heavy rainfall in a short period. Heavy rains and hot summer are favourable for the growth of wet evergreen forest. Along with wet evergreen forest, dry mixed forest is also found in the town.

According 2001 census, Jalpaiguri Municipality with an area of 12.975 km² has population of 1,00,348, which includes 50.45% (50629) males and 49.55% (49719) female population. Jalpaiguri town had population of 9,708 in 1901 and 1,00,348 in 2001. But it's population was 68732 in 1991. So the population of the town has been increased by 7 times during the last 90 years and 10 times during the last 100 years.

SCOPE AND PURPOSE OF THE STUDY

Jalpaiguri was a important urban center of north bengal since last 200 years. It was then under Baikunthapur Mouza which was ruled by Raikat Kings. After then when municipal administration was introduced in 1885, it became the administrative head quarters of Jalpaiguri district. After then it was developed rapidly by increasing its area, population and various socio-economic functions. But by this time Siliguri developed rapidly due to its locational importance. It hindered the development of Jalpaiguri Town.

Different features those attract to study Jalpaiguri town (Municipality) are as follows: Jalpaiguri is a important border town, located at most sensitive area near Bhutan Bangladesh and Nepal. So the study is necessary from national point of view. It is important to study the reason and the nature of concentration of population with in the town as well as in the fringe area. Different socio-economic, urban amenities and employment opportunities are to be studied in the light of increased population and to accommodate the growing population from the rural areas of the district as well as neighboring states by push or pull factors. The economic structure of Jalpaiguri town is controlled mainly by the district influence of tea industries of surrounding

areas of the town. But the condition has been declining significantly during the past 2-3 decades. So it is essential to study the factors for low level of economic development. Several demographic, cultural and socio-economic problems became acute because the urban facilities failed to cope up with the haphazard growth due to lack of proper planning and defective implementation of earlier plans. Some environmental pollution in urban areas causing imbalance of eco-system in the town need to be studied.

This study will help to identify the reasons off slow development and old characteristics of Jalpaiguri town. There is also enough scope to study different parameters, which help in the developmental process of the town. The purpose of the study is to formulate a well developmental plan, which was not planned before for its development.

MAJOR PROBLEMS

Every urban center has some common problems, which develop with the increase of urbanization and population of that area. Jalpaiguri is not an exception of that Jalpaiguri both have physical and socio-economic problems.

Physical Barrier:

As river Karala diagonally bisected the town and stretch for 5.23 km. From north-west to south and only has 3 connected bridge at the southern half of Jalpaiguri, it creates some physical barriers. The railway line, which connects New Jalpaiguri and Haldibari Stations restricts the easy movement of the people to the southern part.

One of the main problems is drainage problem which caused water logging in different part of the town. N.F. Railway track from the main drainage barriers. Even after a medium shower extensive areas become water logged. The privy system is not sufficient. The drains are not leveled according to the slope. The hampered the layout of the water. Garbage are hipped on the drains which are not cleared regularly. This obstruct the flows of water through the drains..

Population Pressure:

Pressure of population growth is also an obstacle to it's growth. Population pressure led to over crowding, conjection and lack of space and it also has an indirect effect on the emergence of

slums. Low economic conditions and unemployments are the adverse effect of population growth.

Socio-economic problems:

Jalpaiguri suffers from inadequate medical facilities. Jalpaiguri Sadar Hospital is confined in a particular area and some private nursing homes are scatteredly established in the town which are not very satisfactory. Most of the administrative functions are scatteredly situated in the residential area and are away from the bus routes. Schools and colleges have students more than their capacity. Children in some primary schools still use to sit on the floor. Post and telegraph services are poor and unevenly distributed in the town.

Problem in the field of Trade and Commerce:

Roads are very narrow in the C.B.D., which led high congestion and overflow of traffic. There is a lack of parking spaces at the commercial centers of Jalpaiguri. Commercial area suffers from the pressure of residential houses. In trading monopoly of some products are found.

Transport Problem:

There are only two main roads in Jalpaiguri town. Roads of Jalpaiguri create a network which has not any definite pattern. Most of the roads are narrow and unsuitable for the movement of heavy vehicles such as Station Road New Town Para area etc.

Railway Ghoomti No.3 and its adjoining areas have been suffering from intense traffic jam, which is found to be beyond control. Almost a permanent chaos is seen here during frequent closure of railway gate between 10.30 – 11 A.M. Long queues of vehicles caused traffic jam at the gate. Traffic congestion is also found in Kadamtala, Head Post Office etc. due to unplanned traffic rules.

Drinking Water Problem:

Drinking water facility is not equally sufficient in all the wards.

Problem of Street Light:

People suffer due to the absence of street light in some part of municipality and due to short of voltage and load shading.

Problem related to living condition:

Growth of population caused the growth of slums and congestion in the residential area, which increase in sanitary condition.

Institutional Problem:

There are also some institutional problems such as land reform problem, problem related with land distribution among poorer land development, taxation and other problems.

OBJECTIVES OF THE STUDY:

1. To analyze and evaluate the location, physical set up, population structure, occupational pattern, land uses and socio-economic functions in Jalpaiguri town.
2. Detail study of urban morphology of the town, and urban land use changes during 1992-2007.
3. To analyze the maximum utilization of different urban amenities, resources and functions available for the people in the study area
4. To find out different functional and spatial gaps and problems in the way of urban development.
5. To suggest and recommended proper development plans for future.

METHODOLOGY

The following methodologies are to be adopted at the time of study of the town.

1. As the work is largely based on field investigation, different types of primary data were collected by preparing different types of questionnaires.
2. Secondary data was collected from Municipality and other Government or non-government offices, in the form of census, gazetteer, reports etc.
3. Data also collected from individual person covering entire area by interview.
4. Different statistical techniques were used for analyzing the data and information. A mathematical method is used to find out the relationship between an independent variable and one or more dependent variables, which are used in making predictions and assessing the variables. The form of any linear relationship between a dependent

and independent variable is given as $Y_c = a + bx$. Other statistical methods are also used to analyze the data.

5. Different types of cartographical maps were drawn with the help of data and these are to be analyzed for preparing report.

HYPOTHESIS:

Taking 20-30% random sampling did Ward wise individual study of population and households along the roads or fringe areas. Ward wise socio-economic study will be done by collecting data from municipality and field study. Determining the level of pollutants did environmental study. The previous literatures and data are to be taken for reference.

LIMITATIONS

As there are many households and number of population is very large in the town, it is impossible to interview all the families through questionnaires. So, 20-35% samples of the households (random) and population are to be taken to analyze the study of information. So, a large portion of the households has been remaining left out of our study. Land use is to be studied by eye-estimation. Due to insufficiency of published data field survey get more importance in this study.

DESIGN OF THE THESIS:

	Introduction
Chapter I	Historical development of Jalpaiguri town.
Chapter II	Geographical Background of the study area.
	Introduction
2.1	Physiography
2.2	Climate
2.3	Drainage System
2.4	Ground Water
2.5	Natural Vegetation
	Conclusion
Chapter III	Population Characteristics of Jalpaiguri Town
	Introduction.

- 3.1 Distribution of population
- 3.2 Composition of S.C. and S.T. Population
- 3.3 Density of population
- 3.4 Growth of population.
- 3.5 Migration pattern
- 3.6 Literacy
- 3.7 Religious structure
- 3.8 Occupation structure, changes of occupation
- 3.9 Slum population
- Conclusion

Chapter IV Land uses and their Changes

- Introduction
- 4.1 Classification
- 4.2 Land use pattern in 81, 91 and 2001
- 4.3 Distribution of functional zones.
- 4.4 Direction and area of changes
- 4.5 Character of Changes
- Conclusion

Chapter V Socio-economic condition of the Town

- Introduction
- 5.1 Education
- 5.2 Health
- 5.3 Trade and Commerce
- 5.4 Finance
- 5.5 Transport and Communication
- 5.6 Housing and Living condition
- Plot size
- Drinking Water
- Privy system
- 5.7 Sewerage system
- 5.8 Dumping garbage
- 5.9 Recreational Places
- 5.10 Others
- Conclusion

Chapter VI Levels of Socio-economic functions and their gaps.

- Introduction
- 6.1 Spatial gaps
- 6.2 Functional gaps
- Conclusion

Chapter VII Identification of Major Problems in the Town

- Introduction

- 7.1 Physical
- 7.2 Population and demographic
- 7.3 Land use
- 7.4 Socio-economic
- 7.5 Institutional
- 7.6 Environment
- 7.7 Slums
- Conclusion

Chapter VIII Different Development Strategies

- Introduction
- 8.1 Earlier strategies and their implication
- 8.2 Impact of the implication of strategies
- 8.3 Recent Plans
- Conclusion

Chapter IX Suggested Development Plans

- Conclusion

CHAPTER I

HISTORICAL DEVELOPMENT OF JALPAIGURI TOWN

INTRODUCTION

Jalpaiguri is said to have derived its name from the olive-trees [Jalpai in Bengali], which grew in the town and were seen even in 1900. The suffix guri means a place. The name Jalpaiguri might be associated with Jalpesh, the Lord Siva, who had been in the minds of men there from time immemorial.

Jalpaiguri was the nucleus of the district formed in 1869 by the British rulers. The local name of a place like Jalpaiguri, which happened to be the seat of a military cantonment, thus gave first its name to the sub – division and then to the district. Hooker and Renel (1788) both mentioned the town as ‘Jelpigory’. According to Hooker (1854) Jalpaiguri was ‘a large straggling village near the banks of the Tista. (Himalayan Journal). Some similarities are common in the naming as suggested by Hooker as well as by Renel.

The town of today had a complete different appearance even a couple of centuries back. Most of the areas in the region was covered with thick forest and inhabited by ferocious animals. The plains, river tracts, foothill were abound with back fever and malaria, as such the region was almost uninhabited (Chakrabarty. P. 1987). However the Jalpaiguri district came into being on 1st January 1869 by way of merger of the Western Duar District and Jalpaiguri subdivision of Rangpur District.

In prehistoric times the district formed and became a part of the powerful kingdom of Pragyothisa or Kamrupa, which extended in far west at the Karatoya. In the 13th century A.D king Bhaskaravarman, who was a contemporary of Harshavardhan of Kanauj and Sashanka of west Bengal, ruled over the whole Brahmaputra valley in Assam and a part of North Bengal. The Bengal ‘Pal’ dynasty included Jalpaiguri district as well as Varendra in its dominions. In

the 11th century the 'pal's were disposed off their kingdom in varendra by the Kaivata Chief Divyak. According to Kamrupa Buranji (a chronicle of Assam King) a Buddhist monk named Jitari, who was referred by the 'Pal' king Mahipal, had established himself as a feudatory chief some where in the western Kamrupa. The capital of western Kamrupa was probably Kamtapur, located in Jalpaiguri district.

In 15th century 'Khen' Rajas such as Niladhwaj, Chakradhwaj and Nilamber extended their dynasty from Kamrupa to Karatoya. Khen Raja Niladhwaj introduced himself as 'Kamteswar' and settled in the capital named kamtapur near Kochbihar. Later in the memory of ascended Khen Rajas, people who settled near River Tista began to use 'Sen' as their title, subsequently the area is known as 'Sen Para'. In 1545, Sishya Singha or ShivDev capture the area presently known as Jalpaiguri district and established its capital in the Baikunthapur forest, on the bank of river Karatoya. He introduced himself as 'Raikat' king. In 1587 king Nara Narayan's son Lakshmi Narayan ascended the throne of Kamtapur, and his son Maharaj ModNarayan (1665-1680) completed the construction of the temple and made grant of 44 jotes or rent free land for the maintainance of the Jalpeswar Temple, located in present Jalpaiguri district.

At the beginning of the 18th century a cousin of the Kochbihar king continuing to farm Mughals on his behalf, and expanded his capital in Baikunthapur forest. The country west of the Tista belongs to the Raja of Baikunthapur, who had in the 2nd half of the 18th century become quite powerful with the help of 'Sanyasi'. During this time river Karatoya started drying out and as a result Raja Dharma Deva Raikat (1709-1724) shifted his capital to the present Jalpaiguri town (Rajbari). Under the 'Dewani- grant' at the time of Shah Alam, emperor of Delhi (1765), Jalpaiguri was acquired by the East India Company. Captain Steuart of the East India Company captured Jalpaiguri on the 3rd of February 1773 during the time of Raja Darpa Deva, son of Raja Dharma Deva Raikat. And the independent Raja of Baikunthapur became the Zaminder of Jalpaiguri. Jalpaiguri was then included in the frontier faujdari (Magisterial Jurisdiction) of Fakirkundi or Rangpur District. Raja Sarba Deva (1809-1848), son of Raja Jayanta Deva constructed the famous Rajbari Deeghi in 1829. The Jalpaiguri subdivision was formed in 1854 with its headquarters at Sookanee and was called the Sookanee subdivision until the formation

of a military cantonment at Jalpaiguri leading to the transfer of the headquarters and the alteration of the name to Jalpaiguri Subdivision. River Tista at the east and River Karala flows through the heart of the town with plenty of drinking water and the favourable location which offered the necessary security to 73 Artillery and 11 Mounted Regiments, associated with the transfer of cantonment in Jalpaiguri town just a few months before the out break of mutiny of Barrakpur Cantonment. In 1869 the southern part was united with the Titalya subdivision of Rangpur to form the new district of Jalpaiguri. The district of Jalpaiguri as an administrative unit came into being on the 1st January 1869, by the amalgamation of the western Duars District with the Jalpaiguri subdivision of Rangpur. It may be noted that a portion of present Jalpaiguri was a subdivision in the Rangpur District now in Bangladesh (From 1854-1869).

1.1 FORMATION OF JALPAIGURI MUNICIPALITY

The Municipal Administration was first introduced in 1885 in Jalpaiguri town and in this respect it has been one of the oldest municipalities of North Bengal. Historically the development of the district started only after the growth of tea plantations which began in 1874-1875. The western Duars, which had been once a very thinly populated forest area, became gradually populated with the development of inhabited village, tea gardens and small factories and Jalpaiguri became the main center of transaction of tea as well as the center of trade and commerce. Hooker visited this place in 1854, and while traveling from Rangdhamali to Baikunthapur, he described the area as 'miserable country'. But, with in 1901 the area was developed so much, that Gruning said that, there was a few district in India, those area developed so rapidly as Western Duars.

Swadesi and Intipartition Movement (1905-1911) had their revibration in the town. At Dinbazar, the boycott of foreign goods movement led to the arrest of Durgadash Chakrabarty, Rabindra Nath Sikdar, Ananda Biswas and others. In 1939, the Bengal Provincial Congress Committee held its Annual conference in Jalpaiguri town. In this time, the congress had captured the Jalpaiguri Municipality. District committees of the Muslim League (1940) and the Hindu Mahasabha were formed on 15th August, 1947, independence came with the partition of the country, which affected Jalpaiguri to a great extent.

1.2 DEVELOPMENT OF JALPAIGURI TOWN

The urban fabric of Jalpaiguri town in the beginning of last century was almost rural in nature. According to Hooker, it was a large village dotted with jungles, bamboo bush and marshy tracts. Present Silpasamiti Para was covered by dense jungle, infested with wild animals including leopard. The 1st tea garden near Jalpaiguri town was established at Gajoldoba (Gurjanghora) in 1875. From 1875 to 1910 more than 150 tea gardens were setup in the district, and attracted people from the other parts of the country. Modern transport system was introduced different places with Jalpaiguri by 'North Bengal State Railway' and Bengal Duars Railways in 1878 and 1896 respectively (Dasgupta, M. 1987). Many people specially traders from Rajasthan, Punjab, and U.P settled during the period from 1870 to 1878. Most offices, residential, commercial houses were kuncha houses with tin roofs. The Head Post Office was constructed in 1878. The Iron House built by Maharaja of Kochbihar in 1880, was the oldest pucca building of the town situated opposite of P.W.D office. Rajbari, Head Post Office, Iron House were the only pucca houses in the town. A church was established in 1882 near Kutchary only for Europeans. Later another church was established in 1896 for Indian Christians at Race course. During this time the roads were very narrow and unmetalled. To improved the communication between the east and west bank of river Karala, a wooden bridge was constructed on Karala near Dinbazar in 1884. The 2nd bridge was constructed on Karala near Head Post Office in 1885, which was known as Iron Bridge. This Iron Bridge was useful to connect kutchary to Head Post Office and Railway Station. Residential areas developed in Raikat Para, Babupara, Ukil Para, and near Dinbazar. In present Silpasamiti Para and near Rajbari rubber plantation was initiated by one European named Mansion in 1879, which expanded beyond the residential zones of the town. Municipality union Board functioned from the Iron House up to 1893 and its own house was built in 1893 near European Club. Municipality established with 5wards, covering 9.61 km² area. The town gradually becomes the center of transaction of tea. The first Bank was established by the British Ruler in Damdim, which was transfer to Jalpaiguri town and named as State Bank Of India. A number of schools were also set up in the town and the town has become a great center of business, service, culture and religion. The Town Club was established in 1898. The 1st published monthly subscription of newspaper was Trisrota (1900), which was one of the oldest published news paper of North Bengal. The population increased from 4,17,855 in 1872,

to 5,80,570 in 1881 and further increase from 680736 in 1891 to 7,87,380 in 1901. In 1901 more than 1/5 of the population was composed of immigrants from elsewhere. In 1915-16 one bridge was constructed near kutchary (court) for the use of Europeans. For the easily accessibility to Suniti Bala Girls school (Sadar Girls School) and the other part of the town, specially to the Sadar Hospital. Dolna Bridge was constructed in 1921-22 and the old wooden bridge near Dinbazar was renovated at the same time. In 1940 the 'Iron Bridge near Kutchary was converted into concrete bridge and name Brabome Bridge, which is presently known as Subhash Setu. The modern transportation facility of Jalpaiguri town and tea based economy help to grow very rapidly both in population and socio-economic condition.

The creation of Jalpaiguri Division consisting of five districts. After independence large influx of refugee population put tremendous pressure on the urban fabrics of the town. In 1961 the geographical area of the Municipality expanded to 10.075 km² and the number of wards also increased from 5 to 7. The Zilla Parishad came into being on 23 Oct 1964. Large colonies at Panda Para and Mashkalaibari were established. Later due to the fragmentation of the wards, the number has been increased from 7 to 19 in 1980. In 1995 the Municipal area again expanded up to 12.975 km² and the total number of ward increases to 25. But due to the emergence of Siliguri, and partition with Bangladesh, Jalpaiguri losts its communication and locational advantage and later known as the district of 3T – Tea, Timber and Tobacco. Presently it includes another T that is Tourism.

CHAPTER II

GEOGRAPHICAL BACKGROUND OF THE STUDY AREA

INTRODUCTION

Jalpaiguri Municipality an administrative headquarters of the district is situated on the west bank of river Tista at $26^{\circ}32'N$ and $88^{\circ}43'E$ in West Bengal. It is oldest and famous town of the district. Jalpaiguri town is limited on the south, west and north by Kharia Mauza (J.L. No 7) of Jalpaiguri Police Station in Jalpaiguri district, and by river Tista to the east. Jalpaiguri has immense importance as border town, locating at most sensitive area near Bhutan, Bangladesh and Nepal. So the study of this town is necessary from national point of view.

2.1 PHYSIOGRAPHY

Physiographically the district may be divided into three regions a) the hilly area, b) The rugged area c) The southern plain. Jalpaiguri town is a part of this southern plain of the district, and characterized by flatness. Besides the hilly areas and the rugged terrain area, the southern portion of the district, where the town located is almost plain. The slopes gradually fall from north towards the south. The maximum elevation of the town's surface level is 84.35 metre, while the minimum surface altitude has been measured to be 77.60 metre. Thus, the difference of altitude the town's surface level is 6.75 metre. Field survey reveals that, some depressions or basins are found near old Masjid, NewTown, Bose Para, Adar Para, Sen Para, Raikat Para and Hospital Para area (Fig. 2.1).

2.2 GEOLOGY AND SOIL

Geologically, Jalpaiguri town is covered with alluvial deposits, as it is situated on the Tista flood plain. Alluvium is the most widespread geological formation in the area. Along the bank of river Tista silty loam and sandy clay predominate. Stratification is common, which is the result of different mode of deposition. Post Pleistocene deposits are marked by a number of Holocene deposits near the Tista bed. The thickness of the sediments varies from 250metres to 300metres. The succession of recent to sub recent deposition is as follows – Alluvium & hill

JALPAIGURI TOWN

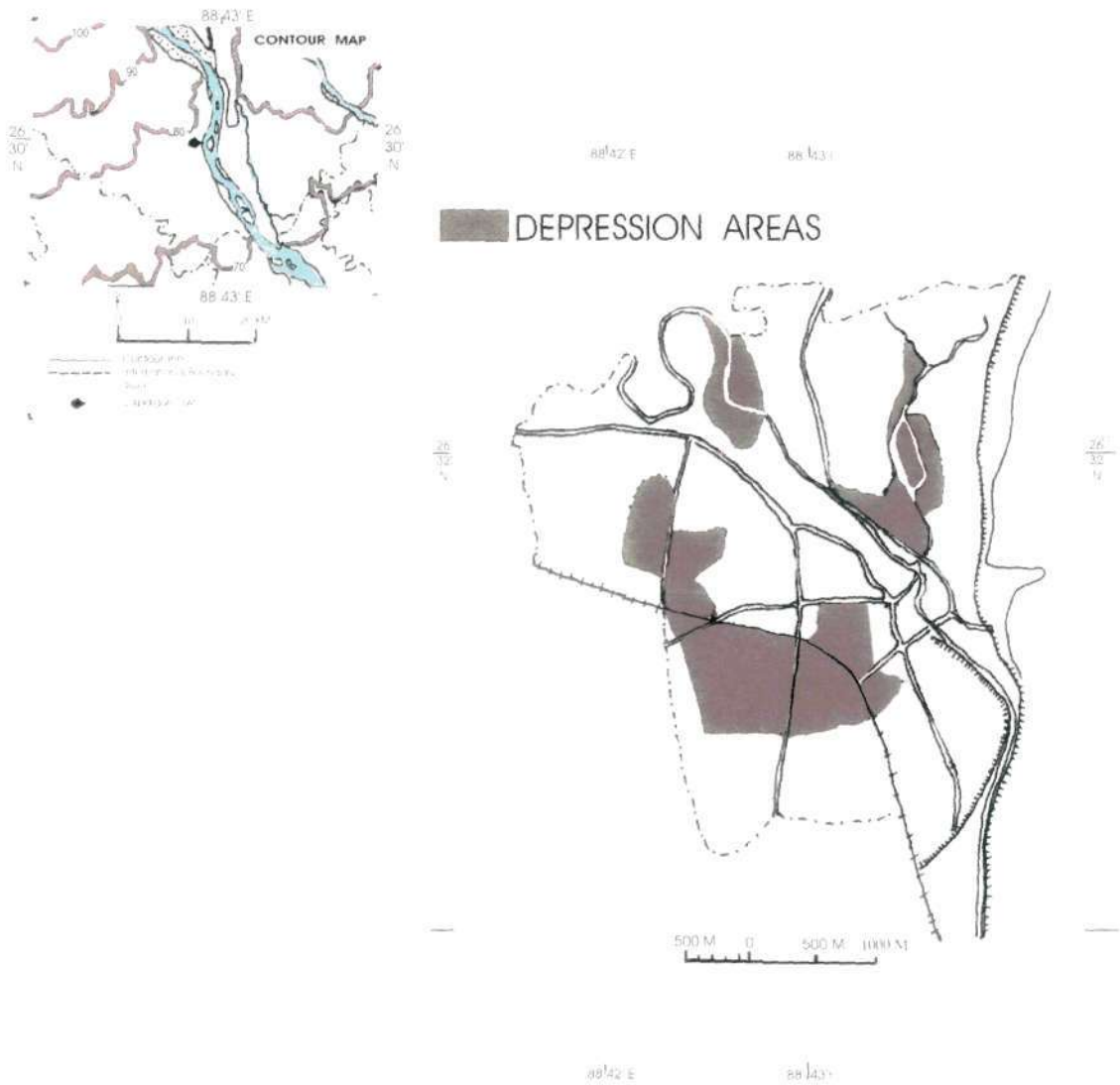


Fig - 2.1

wash material with loose sandy soil – boulders and pebble beds. The lowland contains clay materials. The soils are deficient in organic matter and are characterized by low fertility. This is because the heavy rainfall washout the natural minerals and salts, and washout the decomposed organic matters and hampers the natural process in building up soil fertility and soil structure.

2.3 CLIMATE

The speciality of the climate of Jalpaiguri district is sultry heat with high humidity and heavy precipitation. The climate of Jalpaiguri town is identical and dominated by monsoon winds. The Himalayan barrier at the north also affects the local temperature and rainfall. The climate of Jalpaiguri is dominated by two seasons, rainy season and winter. Two short spanned seasons i.e. spring and autumn are also noticed.

2.3.1 Seasons

2.3.1.i Summer

Summer season in Jalpaiguri starts from mid April. Temperature ranges up to 35°C at daytime. In 11 March 1932, Jalpaiguri town has experienced a high temperature of 40°C, which is the highest recorded temperature of the town. Nor western such as Kalbaishakhi is very common in summer.

2.3.1.ii Rainy season

Rainy season started in the starting of June and continued up to next four months. The climatic condition is the effect of the low- pressure system at the northwestern India. Rainy season is the most prolonged season in Jalpaiguri.

2.3.1.iii Autumn

The shortest season of Jalpaiguri is autumn starts from mid October and continues till mid November. This season is characterized by sunny day with clear sky and decrease of temperature.

2.3.1.iv Winter

Winter starts from mid November and continue till mid March. Mid December to mid January being the coldest period of winter. Temperature goes down to 10°C during the winter and some time drizzle is also found here. Fog also occurs in winter months.

2.3.1.v Spring

Spring starts from mid March and continue up to mid April or end of April. In April dry, warm wind flows from north Bihar to Jalpaiguri during this period.

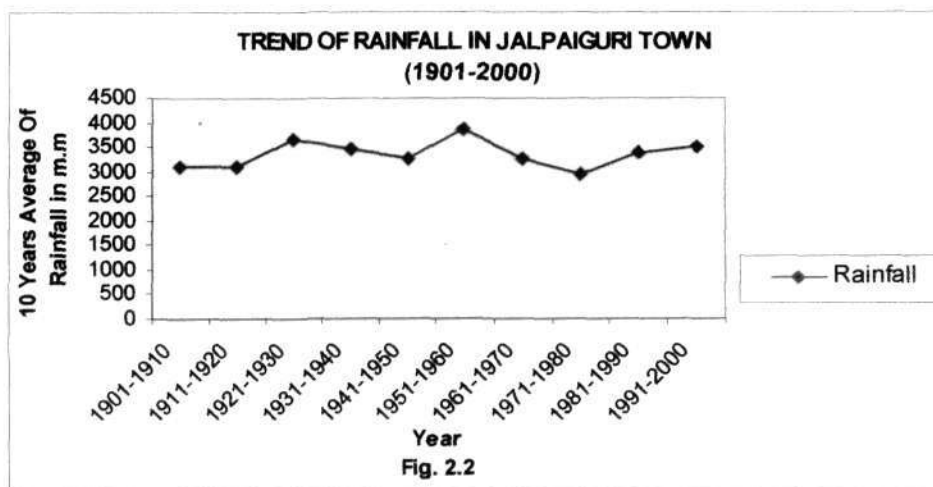
2.3.2 Rainfall

The rainfall is much heavier in Jalpaiguri. The mean annual rainfall of Jalpaiguri town is 3319.1mm. The rains are usually very heavy during July to September, which account 85% of the total rainfall of the year. July is the rainiest month, when the rainfall account to about a 50% of the annual total. In 1892, on the 8th July, the total amount of rainfall was recorded to be 403.3mm with in a period of 24 hours. In Jalpaiguri town 116 rainy days (average) with 2.5 mm. or more is found in rainy season.

Table 2.1 TREND OF RAINFALL IN JALPAIGURI TOWN (FROM 1901 TO 2000)

Year	10 Year Average of Rainfall in m.m
1901-1910	3102.0
1911-1920	3096.0
1921-1930	3672.0
1931-1940	3457.0
1941-1950	3277.0
1951-1960	3867.0
1961-1970	3282.0
1971-1980	2960.0
1981-1990	3371.0
1991-2000	3514.9

Table 2.1 & Fig-2.2 shows the trend of rainfall, which reveals that rainfall period is high during 1920-30 and 1950-60 in the town. And low rainfall period is found during 1970 to 1980. Up to 1930 the amount of total rainfall increased, but decreased during 1970 to 1990. Fig. 2.3 shows monthly distribution of temperature & rainfall in Jalpaiguri Town



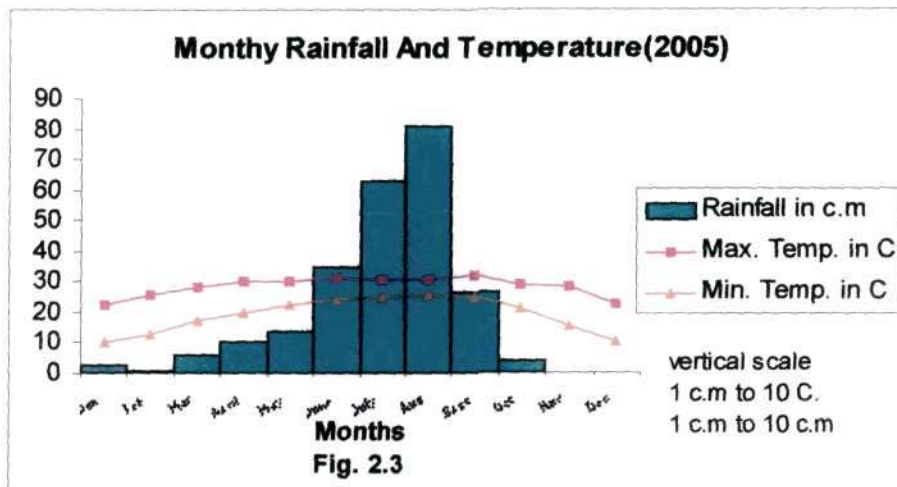
2.3.3 Temperature

During summer May is the hottest month when mean maximum and minimum temperature ranges between 31°C to 23°C respectively. During the rainy months temperature fluctuation is recorded to be 6°C . With the returning of southwest monsoon the temperature decreases and weather becomes cooler. In the month of January the daily average maximum and minimum temperature ranges between 10°C to 23°C . The lowest temperature was recorded on the 3rd Feb. 1905, which was 2.2°C .

Table 2.2 MONTHLY AMOUNT OF RAINFALL AND TEMPERATURE & AVERAGE HUMIDITY IN JALPAIGURI TOWN(2005)

Month	Rainfall in m.m	No. of Rainy Days	Temperature in $^{\circ}\text{C}$		Avg. humidity in %
			Max.	Min.	
January	25.1	3	22.7	10.4	73.3
February	6.1	1	25.5	13.0	69.25
March	57.3	3	28.6	17.4	72.85
April	105.4	9	30.2	20.2	72.25
May	136.2	10	29.9	22.2	75.4
June	345.8	16	31.5	24.4	83.1
July	627.4	20	30.8	25.3	85.5
August	811.7	19	30.7	25.5	88.05
September	265.6	7	32.4	25.0	82.35
October	398.0	9	28.7	21.0	82.80
November	0.0	-	28.3	15.4	82.80
December	0.0	-	22.6	10.6	52.55
Total -	2778.6 m.m	97 days			

Source- Indian Meteorological Department, Jalpaiguri



2.3.4 Humidity

The atmosphere is highly humid through out the year in Jalpaiguri town. During the monsoon months humidity is found very high (85-90%) throughout the day, where as the humidity is low (45%-55%) during the winter seasons. ,

2.3.5 Cloudiness

In the monsoon season, sky is heavily clouded or over casted. From October to April, the sky generally remains clear or lightly clouded, which increases from May onwards.

2.3.6 Wind

Wind is generally light, except for short spells during thunder- storms in the period from March to May, when they are stronger. In the pre monsoon months from March to May, winds blow mainly from northeast or easterly directions. In the monsoon months, the winds are mainly blow from south. Some of the cyclonic storms affect the town causing widespread heavy rainfall.

2.4 DRAINAGE SYSTEM

Jalpaiguri town is situated on the west bank of river Tista and the entire town area is drained by the Tista and its tributaries i.e, Karala, Dhardhara, Rukruka, Chukchuka and Gadadhar, the last one is the tributary to the river Panga. The characteristics of the major river system of Jalpaiguri town are discussed in this chapter (Fig. 2.5).

**DRAINAGE
OF
JALPAIGURI TOWN**

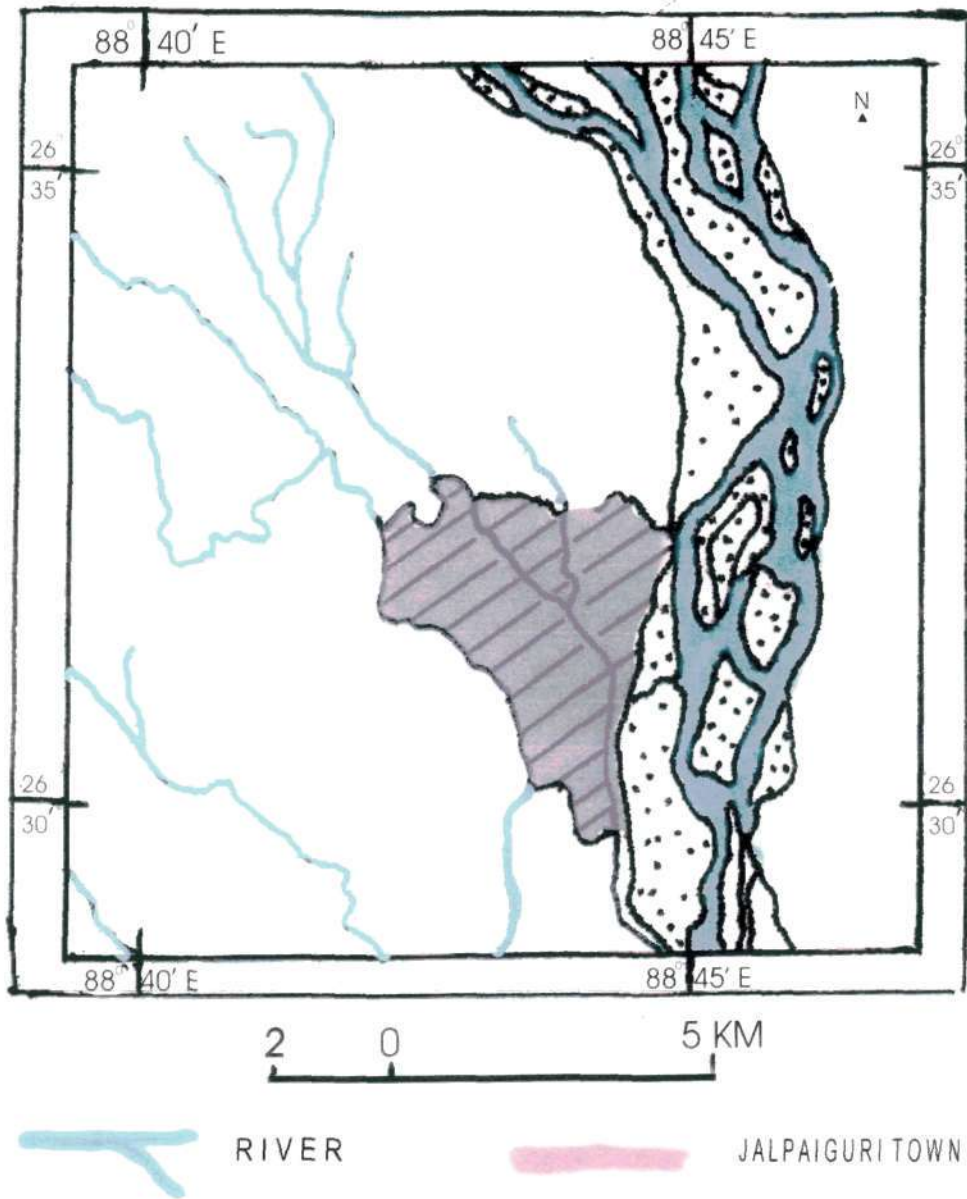


Fig - 2.4

Tista

The Tista, the largest river of North Bengal flows through the east of the town. According to Buchnon-Hamilton (1810), Rennel (1770), Furgusson (1770-1979) the river Tista and Karotoya were the same river that flowed through the Atrayee-Punarbhaba into the Ganga. Due to tectonic activities river course shifted again and again and as a result the Tista migrated eastwards bifurcating the river Karatoya. In the successive years the Tista shifted towards east and communicates with Meghna in Bangladesh. Till 1960's the river was the most important drainage channel for Jalpaiguri. The flood of 1968 caused the huge deposition in the river- bed of Tista intensified the problem of Jalpaiguri's drainage.

Karala

River Karala is one of the tributaries of river Tista on its right bank. It originate from the Baikunthapur forest in Rajgang police station and flows down to the Tista at kings Ghat in Jalpaiguri town. In the last three km, the river flows through the town dividing it into two halves. Now the river meets Tista through an artificial waterway near Kadobari, 4 km south of the town. Deforestation and rapid land use changes during the twentieth century have accelerated the processes of deterioration of the river Karala.

Other Rivers

A number of small rivers, those are the tributaries of either river Karala or river Panga are flowing through the town. Among those, Dhardhara, Gadadhar, Chukchuka, Rukruka are most important.

Dhardhara

The river Dhardhara flows from north to south through the eastern part of the town having a catchment area of 13.8 km² falls into Karala with in Jalpaiguri town near hospital. It acts as a natural drainage for considerable parts of Sen Para, Hospital Para and Raikat Para.

Gadadhar

River Gadadhar flows just beyond the southern part of municipal boundary and falls into the river Panga near Dhapganj. The total catchment area is 10.74 km². At present the river acts as the most important drainage out let of Jalpaiguri Town.

Chukchuka

The river Chukchuka is a small river and the left hand tributary of river Karala. The catchment's area of the river is 10.98 km² and flows on the north of municipality.

Rukruka

The river Rukruka originates from southern edge of Baikunthapur forest and meets the river Karala at the north of the town near Engineering College and having a catchment area of 13.97 km².

2.5 VEGETATION

Heavy rains and hot summer are favourable for the growth of wet evergreen forest. Coconuts, Mango (*Mangifera indica*), Litchi (*Litchi Chinenis*), Papaya (*Carica Papaya*), Guava (*Psidium Guajava*), Amla (*Emblica officinalis*) etc. are common in the town. Among the other natural trees, Sissoo (*Dalbergina Sissoo*), Simul (*Bombax malabriculum*), Neem (*Melia azadirachta*), Siris (*Albizzia procera*), etc are more common. Olive, was the common tree of the town, become few in number. Bamboos thrive luxuriantly all over the town in the last century which, is not found in the town in the present days. Along with wet evergreen forest, dry mixed forest is also found in the town.

CONCLUSION

Jalpaiguri Municipality is the nucleus of the district situated on the Tista flood plain, and is characterized by flatness. The slope of the town decreases towards the south with some district depressions at particular points. While the general slope of the town is from north to south, the embankments along River Tista and Karala have altered the natural slope of the town, and are responsible for many hazards particularly water logging. Alluvial deposits are common along the Tista flood plain, which consists of silty loam and sandy clay type soil. The drainage system of the town is associated with two major rivers i.e. river Tista and river Karala. River Karala flows at the heart of the town, being the most important natural drainage channel of the town. But huge flood deposits caused a rise of riverbed of Tista and Karala, which obstructs the natural disposal of storm-water, thereby increases the problem of water logging in the lowlands. The climatic condition of Jalpaiguri town is of wet monsoon type, characterized by heavy rainfall and cold winter. But the total numbers of annual rainy days have decreased recently with heavy rainfall in a short period. During the last 112 years in Jalpaiguri town the temperature increased by 1.3°C. This also affected the bio-diversity in this town as well as the whole district.

CHAPTER – III

POPULATION CHARACTERISTICS OF JALPAIGURI TOWN

INTRODUCTION

Demography means 'scientific study of human populations, family with respect to their size, their structure and their development (U.N.1958). Demography has its focus on measurement of the rate and trend of various population characteristics such as growth of population, density and distribution of population composition etc. So, population is the focus to the study of urbanization of an area. Various demographic attributes to Jalpaiguri town are summarized in this study.

3.1 DISTRIBUTION OF POPULATION

Jalpaiguri district was established by British rulers on the 1st of January, 1869, with its headquarters at the present Jalpaiguri town. Large number of people from various sphere of activities settled in the town. After independence, large influx of refugee population put tremendous pressure on the urban fabric of the town. According 2001 Census, Jalpaiguri Municipality with an area of 12.975 km² has population of 1,00,348, which includes 50.45% (50629) males and 49.55% (49719) female population. At present, Jalpaiguri municipality shares 0.208% of the total area, and 16.11% of the total urban population of the district. The remaining 83.3% of urban population of the district shared by other towns.

3.1.1 Size Of Wards In Terms Of Area

According to 1991 census, the total area and total population of the town were 10.08 km² and 68732 persons respectively. During the last 10 years there is an increase in area (2.895 km²) and population in the town. So, it can be said that the total area and population is increasing day by day. The town has 25 Municipality wards and the size and area of the wards are very irregular. Ward no 2 covers the largest area (1.9138 km²) and is situated in the northeastern corner of the town, where as ward no 7 covers the smallest area (0.1523 km²). This ward is situated near C.B.D.

Among 25 wards, 52% is shared by small category (below 0.4 km²) and 16% is shared by large category (above 0.8 km²). So, most of the wards of the municipality have a smaller area than the average (0.519 km²). The larger wards are found in the north and northeastern part of the municipality encircling the smaller wards, located in the central and southwestern parts of the town.

3.1.2 The size of Wards In Terms Of Population

Variations in the distribution of population among the wards are also noticed (Fig. 3.1). The highest population (6775 persons) is recorded in ward no 2 and the lowest (2478 persons) population is recorded in ward no 18. Population potentialities can be measured by the distribution of population among the wards. On the basis of population size the wards can be classified into different categories as follows in Table 3.1.

Table 3.1 DISTRIBUTIONS OF WARDS ACCORDING TO POPULATION SIZE IN JALPAIGURI TOWN

Population Size	Category	Percentage of Total Population	Number of wards	Percentage of Wards
<2940	Very Low	7.85	3	12
2940 - 4010	Low	36.65	11	44
4010 - 5080	Moderate	37.03	7	28
>5080	High	18.47	4	16
		100.00	25	100

Source- Census 2001

Table 3.1 reveals that 12% of the wards of the town has a very low population (below 2940) because their areas are relatively small. And most of the wards (44%) accommodate low population (between 2940 to 4010). A large number of populations (above 5080) are noticed only in four (4) wards, which shared 16% of the total wards, and are much bigger in area than other wards of the town. It is also found that these wards are situated at the northeastern and southeastern periphery of the town. As the price of land and rent of houses is lower than C.B.D, a large number of low to medium income group people settled here. The highest percentage (37.03%) of the total population is found in the wards, situated in and around C.B.D. Despite of their smaller area, several urban facilities attract people to reside here.

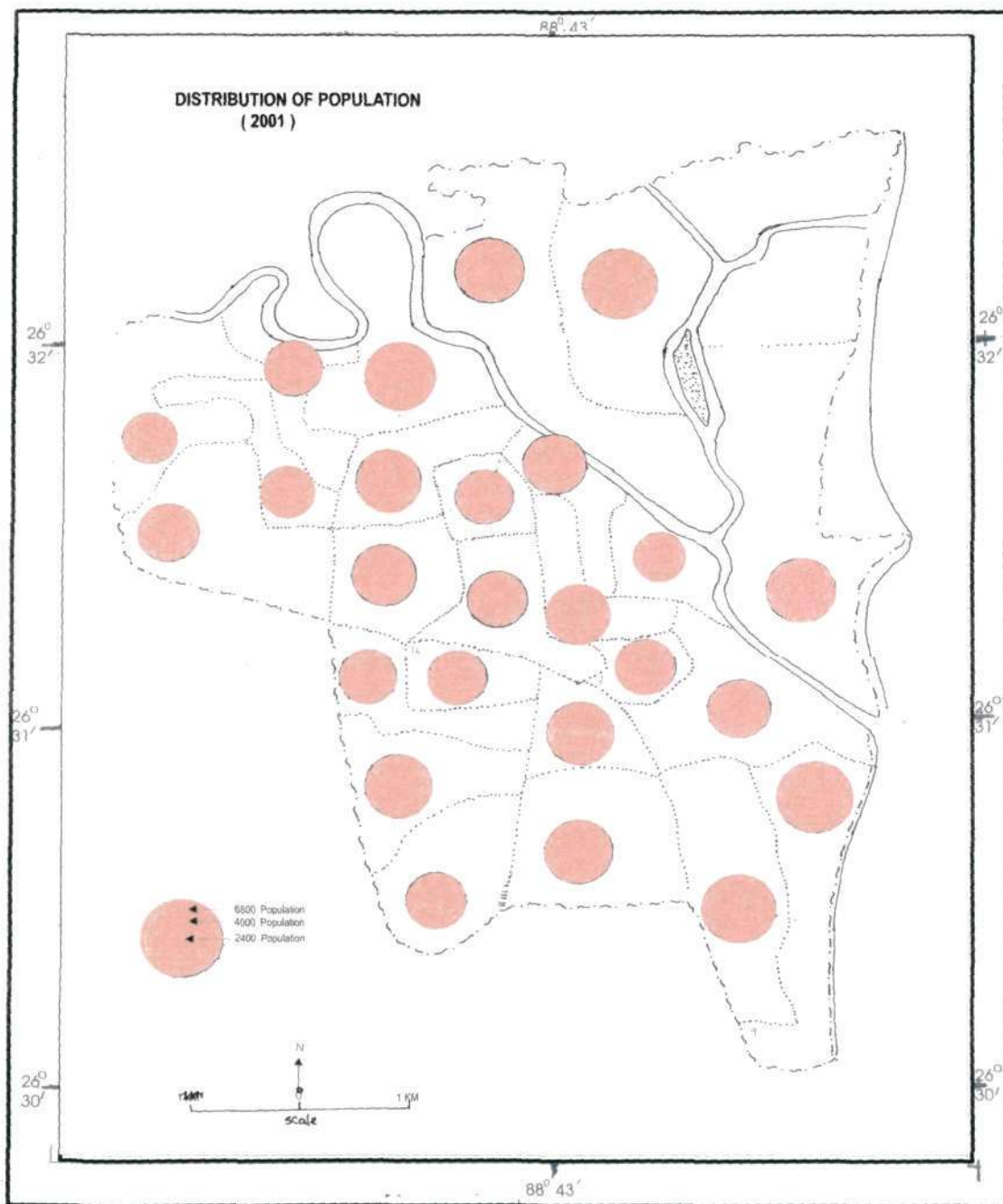


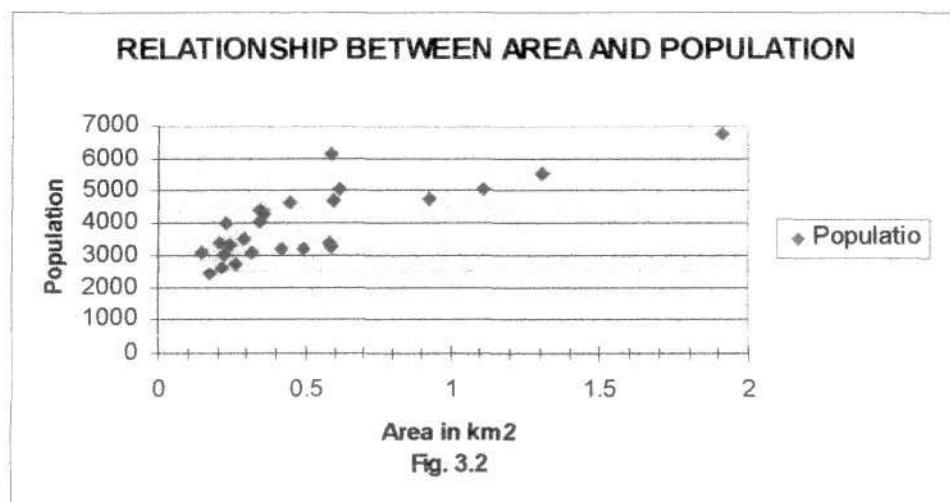
Fig - 3.1

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Fig. 3.2 shows a scattered diagram, which is giving an idea of the relationship between population and area of each ward of the municipality. Wards, those having area below the average (<than 0.5 km^2) are characterized by moderate population (up to 5000 persons). The diagram also shows that an increase of population above 5000 persons in each ward also tends to cause an increase in the area that in from 0.6 km^2 to 3 km^2 .



3.2 COMPOSITION OF POPULATION

The classification of population according to sex is an important aspect of population structure. Many economic & social relationships are closely related to the balance or disparity between numbers of males & females. In Jalpaiguri town the total number of males and females are 50608 and 49697 respectively (Census 2001). Where as in 1991 35020 males and 33712 females share total population. So, it can be said that, there is an increase in males (+44.51%) and females (+47.42%) respectively. Fig. 3.3 shows the male-female composition of population since 1961 to 2001.

COMPOSITION OF POPULATION (1961 – 2001)

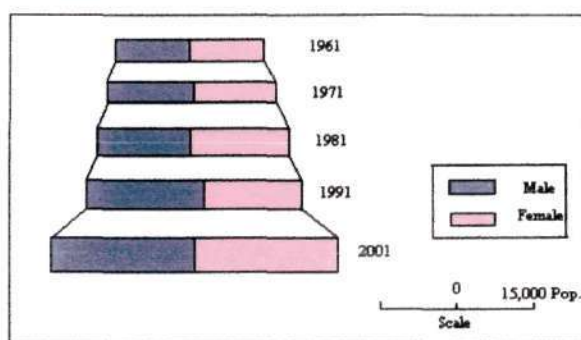


Fig-3.3

3.2.1 Sex Ratio

Sex –Ratio is an important component to determine the level of human resource of the municipality and it is an important component to determine the level of participation in different economic activities. The ratio of two sexes in a population is normally expressed as the number of females per 1000 of males. The ratio of females per 1000 males was 981, which was higher than district (u) average (941) as a whole in 2001. The increasing trend in female sex ratio indicates that more men with their females like to reside in the town, because Jalpaiguri is a district headquarters, which has more service opportunities. A continuous increase of female ratio has also been noticed in different decades in the town due to flow of refugees and female workers from the neighboring areas and Bangladesh. On the basis of sex ratio the wards can be categorized as follows in Table 3.2

Table 3.2 DISTRIBUTIONS OF WARDS ACCORDING TO SEX RATIO (2001)

Sex Ratio (Females / 1000 Males)	Category	No of Wards	Percentage of Wards
<900	Very Low	1	4
900 - 950	Low	3	12
950 - 1000	Moderate	13	52
1000 - 1050	High	6	24
>1050	Very High	2	8
		25	100%

Census 2001

Table 3.2 & Fig 3.4 reveals that the majority of the wards (52%) are shared by moderate category (950-1000 females / 1000 males). Sex-ratio is high (1000-1050 females / 1000 males) in Ananda Para, Natun Para, Panda Para, Ukil Para, Newtown Para and others places near C.B.D, which occupy 24% wards of the town. This is mainly due to the development of

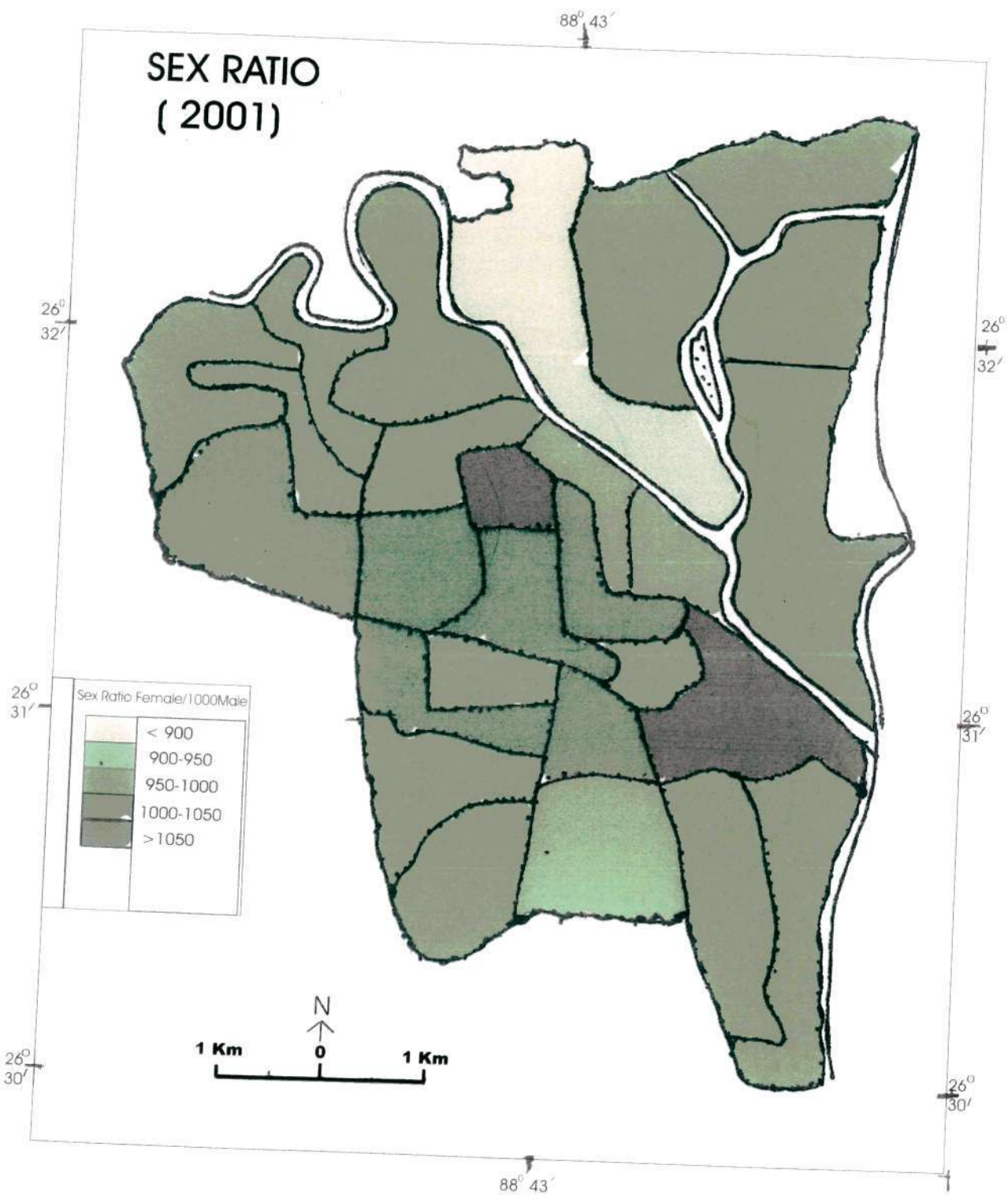


Fig -3.4

residential areas in these places. Marriage is one of the important factors for the increase of female percentage in residential areas. About 8% of the words show very high sex-ratio (above 1050 females/1000 males). This is due to the concentration of female working population specially in girls schools such as Jalpaiguri Govt. Girls' High school, Central Girls' High school, Sishuniketan etc. Sex ratio is very low (<than 900) is ward no 1, situated at the left bank of river Karala. As it is an old portion of the town existence of arable land, remoteness, and non-availability of urban facilities become responsible for the concentration of male agricultural labourers.

3.2.2 Scheduled Caste And Scheduled Tribe Population

The term scheduled caste, appeared for the first time in the government of India,(Act. 1935). The British Government issued the scheduled caste order in 1936 classifying certain castes, races and tribes as scheduled caste, as categorized by Hulton, the Census commissioner of India in 1931.

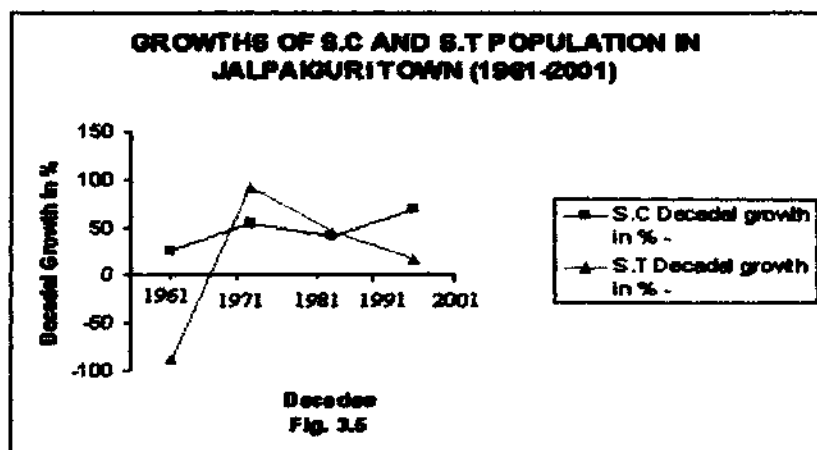
According to 2001 census, the scheduled caste (20190) and scheduled tribe population (975) shared 20.12% and 0.97% of total population respectively, which accounted about 21.09% of the total population of the town. A high rate of increase in both scheduled caste and scheduled tribe population were noticed during 1971-81 and 1981-91. The decade-wise growths of scheduled castes and scheduled tribes are shown in Table 3.3.

Table 3.3 SCHEDULED CASTES AND SCHEDULED TRIBES AND THEIR DECADAL GROWTH IN JALPAIGURI TOWN

Year	Schedule Caste			Scheduled Tribe		
	Population	% of Total Population	Decadal growth in %	Population	% of Total Population	Decadal growth in %
1961	4347	8.90	-	2448	5.00	-
1971	5479	9.90	+26.0	295	0.50	-87.90
1981	8440	13.70	+54.0	567	0.92	+92.20
1991	11925	17.35	+41.29	828	1.20	+46.03
2001	20190	20.10	+69.31	975	1.00	+17.75

A negative growth for schedule tribes (-87.90%) was noticed during 1961-71 due to the destruction of their dwellings by the devastating flood in 1968 and a large migration from urban

to rural areas. Again, an increase of scheduled castes and scheduled tribes population in the town during 1971-81 and 1981-91 were due to migration from rural areas for search of jobs.



Variation in the distribution of scheduled caste and scheduled tribe population among the wards are also noticed. The highest scheduled castes population (2446 persons) is recorded in ward no 9, and the lowest (52 persons) is recorded in ward no 18, which are shared by 12.11% and 0.20% of the total scheduled caste population of the town.

The highest scheduled tribes population (303 persons) is found in ward no 10 and lowest (2 persons) is found in ward no 14 and 17. Thus, 31.08% and 0.21% of the total S.T. population of the town shares these. On the basis of concentration of S.C & S.T population, the wards can be categorized as follows. (Table 3.4 & 3.5)

Table 3.4 INDEX OF CONCENTRATION OF SCHEDULED CASTE POPULATION (2001)

Index of Concentration of S.C	Category	Percentage Of wards
<0.5	Very Low	20
0.5 - 1.0	Low	40
1.0 - 1.5	Medium	24
1.5 - 2.0	High	12
>2.0	Very High	4

It is found from Table 3.4 that about 40% of the wards have a low concentration of scheduled caste population, which is observed in the central part and the right bank of river Karala. High concentration of S.C. population is found at the left bank of river Karala and the Southeastern fringe of the town, which is shared by 12% of the wards. Now a very high concentration is found in ward no 12, which occupied a part of Pnada Para, Jayanti Para, Tiemol Road etc.

measure the inequality in their distribution. The deviation of the curves (representing S.C & S.T population) from the line of equal distributions indicates lesser concentration of scheduled caste and scheduled tribe population in relation to the total population. It can be said that the degree of concentration of S.C and S.T have a similarity with the index of concentration S.C & S.T, because both are low. Fig. 3.6 shows the degree of concentration of S.C & S.T are shared by 35% and 29% of the total population in 2001.

3.4 DENSITY OF POPULATION

In 1981, the Municipality had a population density of 6125 persons per km², 1991 it was 6818 persons per km², and in 2001 it has increased to 7730 persons / km² as a whole. Before independence the early settlers of the town resided on the riverbank area. After the independence, the density of urban population has been increasing in an unabated manner. The increasing trend of population density can be visualized from Table – 3.6

Table: 3.6 Decadal Change Of Population Density Of Jalpaiguri Town & Jalpaiguri District (U)

Year	Density Of Population/km ²		Decadal Change	
	Jalpaiguri (M)	District (U)	Jalpaiguri (M)	District (U)
1901	963	1020	-	-
1911	1137	1167	174	147
1921	1440	1464	303	302
1931	1881	1881	441	412
1941	2754	2755	873	874
1951	4093	2488	1339	-263
1961	4835	2103	742	-385
1971	5472	2822	637	+719
1981	6125	2334	653	-488
1991	6818	450	693	-1884
2001	7730	547	912	+97

Fig.-3.7 indicates the decadal change of population density of population from 1901 to 2001. The decadal change of population density was quite similar to the district (u) up to 1941.

From 1951 to onward in Jalpaiguri town population density is found positive due to immigration from neighbouring area. But in 1951 and 1961 density of the district is found negative. This is because most of the urban centres increased in size by joining with sub-urban areas.

3.4.1 Ward Wise Population Density And Population Pressure

Ward wise density distribution of Jalpaiguri Town in 2001 is found conspicuous as is shown in figure 3.8. The density of population ranges between 3540 persons/km² to 20,564 persons/km².

Table :- 3.7 Ward wise Distribution Of Density In Jalpaiguri (2001)

Density Per km ²	Category	Percentage Of wards
1672 - 5984	Low	24

Table 3.5 INDEX OF CONCENTRATION OF SCHEDULED TRIBE POPULATION (2001)

Index of Concentration of S.T	Category	Percentage Of wards
<0.4	Very low	52.17
0.4 - 0.8	Low	21.74
0.8 - 1.2	Medium	4.35
1.2 - 1.6	High	4.35
>1.6	Very High	17.39

The Index of concentration of scheduled tribe population (Fig. 3.7) shows that major portion of the wards (52.17%) have a very low concentration. scheduled tribe population is not found in the main commercial area of the town (Ward no 6, 18). An abnormal situation is also found that both Scheduled Caste & Scheduled Tribe people are concentrated at the same words. As Scheduled Tribe populations mainly are from low-income group so, they occupy the area where house rent and price of land are comparatively low

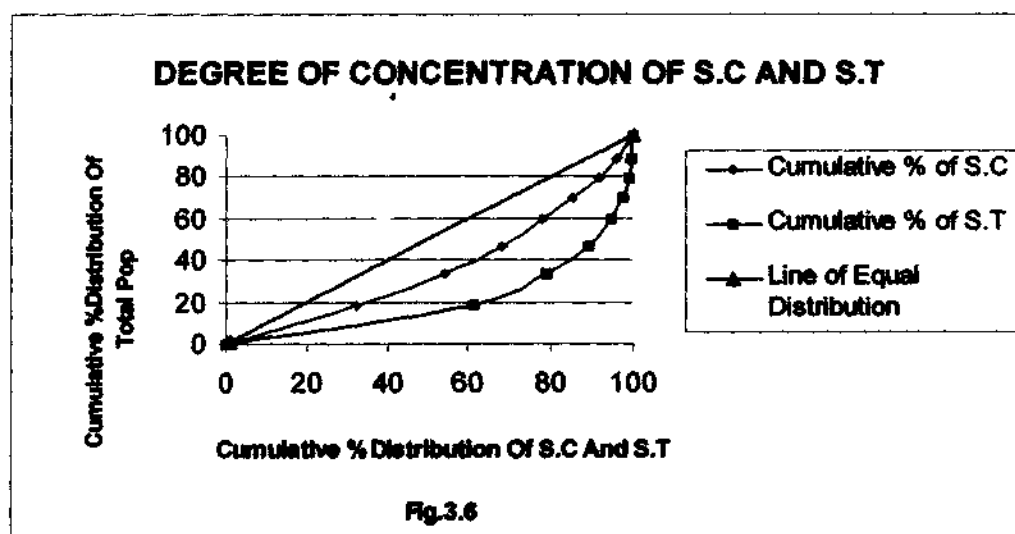


Fig. 3.6 represents the Degree Of Concentration of both scheduled caste and scheduled tribe population of Jalpaiguri in 2001. Lorenz curves for S.C & S.T are used to measure the inequality in their distribution. The deviation of the curves (representing S.C & S.T population) from the line of equal distributions indicates lesser concentration of scheduled caste and scheduled tribe population in relation to the total population. It can be said that the degree of

concentration of S.C and S.T have a similarity with the index of concentration S.C & S.T, because both are low. It also shows that the degree of concentration of S.C & S.T are shared by 35% and 29% of the total population in 2001.

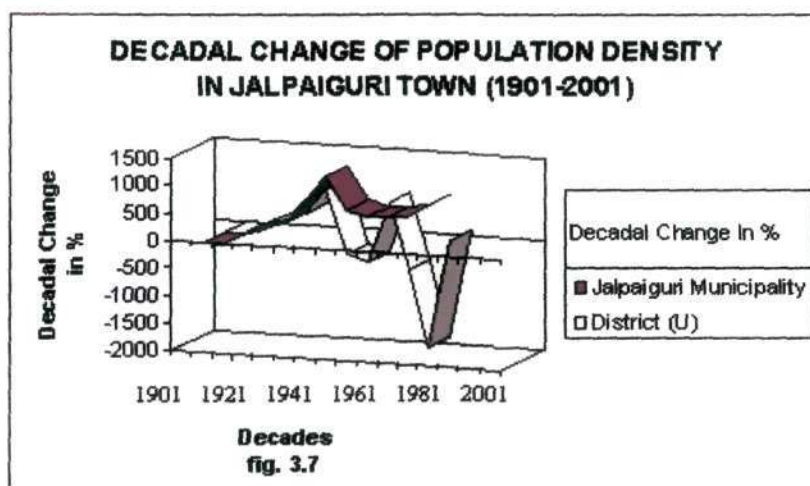
3.3 DENSITY OF POPULATION

In 1981, the Municipality had a population density of 6125 persons per km², 1991 it was 6818 persons per km², and in 2001 it has increased to 7730 persons / km² as a whole. Before independence the early settlers of the town resided on the riverbank area. After the independence, the density of urban population has been increasing in an unabated manner. The increasing trend of population density can be visualized from Table – 3.6

Table: 3.6 DECADAL CHANGE OF POPULATION DENSITY OF JALPAIGURI TOWN & JALPAIGURI DISTRICT (U)

Year	Density Of Population/km ²		Decadal Change	
	Jalpaiguri (M)	District (U)	Jalpaiguri (M)	District (U)
1901	963	1020	-	-
1911	1137	1167	174	147
1921	1440	1464	303	302
1931	1881	1881	441	412
1941	2754	2755	873	874
1951	4093	2488	1339	-263
1961	4835	2103	742	-385
1971	5472	2822	637	+719
1981	6125	2334	653	-488
1991	6818	450	693	-1884
2001	7730	547	912	+97

Fig.-3.7 indicates the decadal change of population density of population from 1901 to 2001. The decadal change of population density was quite similar to the district (u) up to 1941. From 1951 to onward in Jalpaiguri town population density is found positive due to immigration from neighbouring area. But in 1951 and 1961 density of the district is found negative. This is because most of the urban centres increased in size by joining with sub-urban areas.



3.3.1 Ward Wise Density Population

Ward wise density distribution of Jalpaiguri town in 2001 is found conspicuous as is shown in fig 3.8. The density of population ranges between 3540 persons/km² to 20,564 persons/km².

Table 3.7 WARD WISE DISTRIBUTION OF DENSITY IN JALPAIGURI (2001)

Density Per km ²	Category	Percentage Of wards
1672 - 5984	Low	24
5984 - 10296	Moderate	20
10296 - 14608	High	44
14608 - 18920	Very High	12

It is found from table 3.7 that, the majority of the wards (44%) is shared by high density of population (10296-14608 persons/km²). By comparing table 3.7 and Fig 3.8, it is clear that density is high in the wards, situated in the central part are basically residential in nature, such as Natun Para, Ananda Para, Mohanta Para, Mahuripara Ukil para, Circular Lane etc. Slums near Dinbazar (C.B.D), Jayantee Para, Subhash Unnayan Pally are also recorded high density of population. Concentration of poor slum people are also responsible for high density near C.B.D, adjacent area of D.B.C Road, Kadamtala Patgola and along with the railway track. Density is high in residential colonies like Panda Para, Ashok Nagar, Mashkalaibari, Pabitra Para etc. Very high density of population in the slums situated in Badambasti, Tinpara, Bhatia Building,

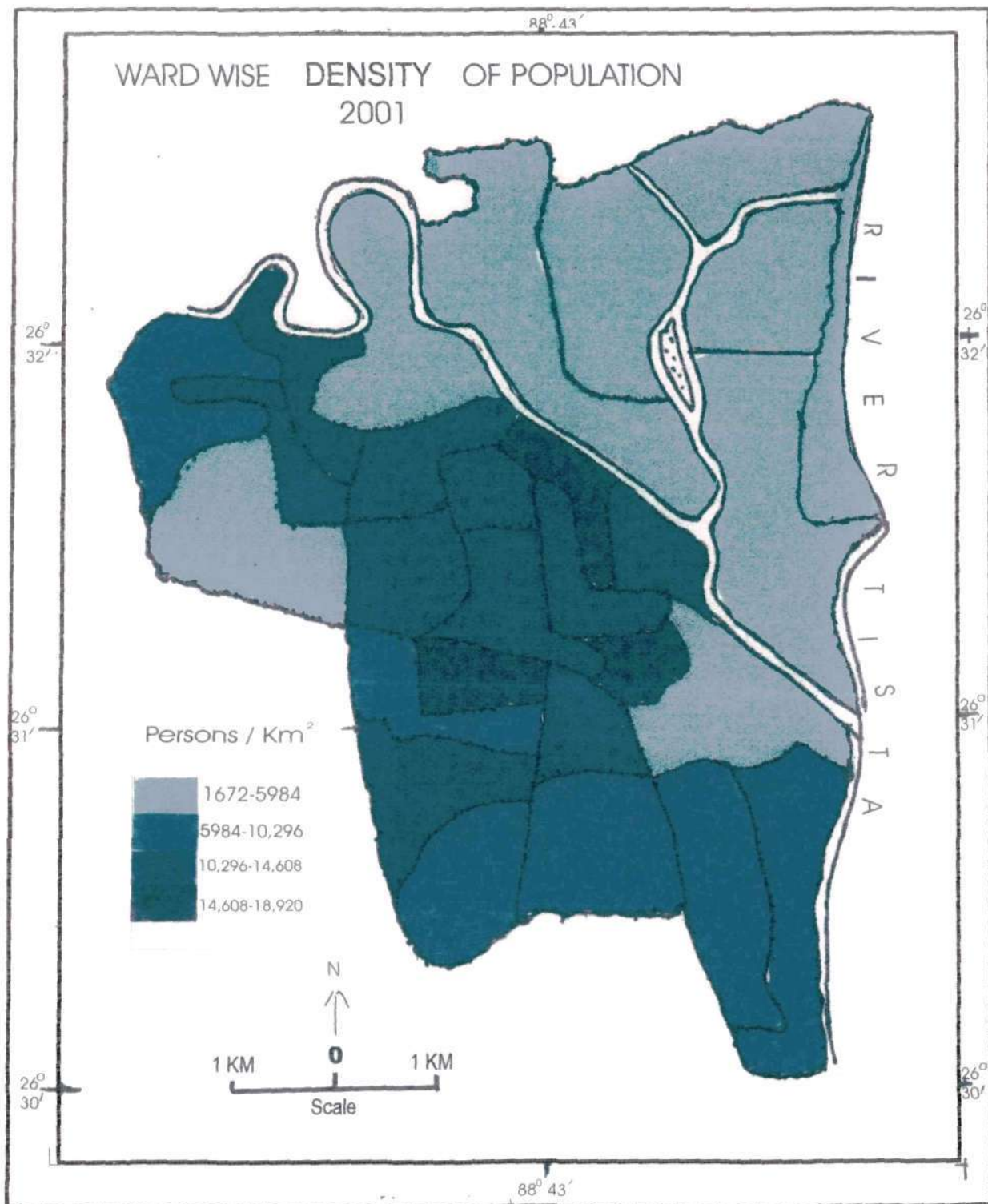


Fig - 3.8

Station Road, Chunilal Road of ward no 4, 7 and 16. Field survey reveals that concentration of rich Marwary businessmen is also responsible for high to very high density of population in ward no 4 & 5. The wards situated at the northern and eastern parts of the municipality, comprising much bigger area than other wards are characterized by low density (1672-5954 persons/km²), which is shared by only 24% of the total words.

3.4 POPULATION PRESSURE

The location of administrative headquarters in the town along with all other infrastructural, socio-cultural facilities such as the lines of transportation, educational, medical, banking and other institutions are responsible for the continuous pressure to the town. The Index of population pressure is shown by regression equation which is represented as $Y_c = 9714.369 + 3988.678.X$ (Fig 3.9). The slope of the regression line 'b' which is also known as regression co-efficient, shows the estimated average change in population with respect to per km² area. As an increase in the size of the wards (independent variable) tends to cause an increase in the rate of population (dependent variable), the correlation is said to be positive.

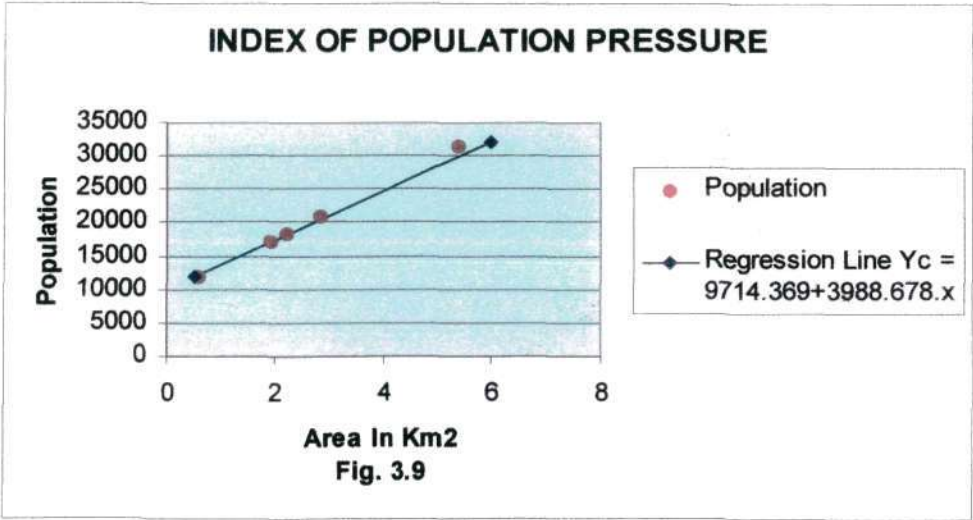
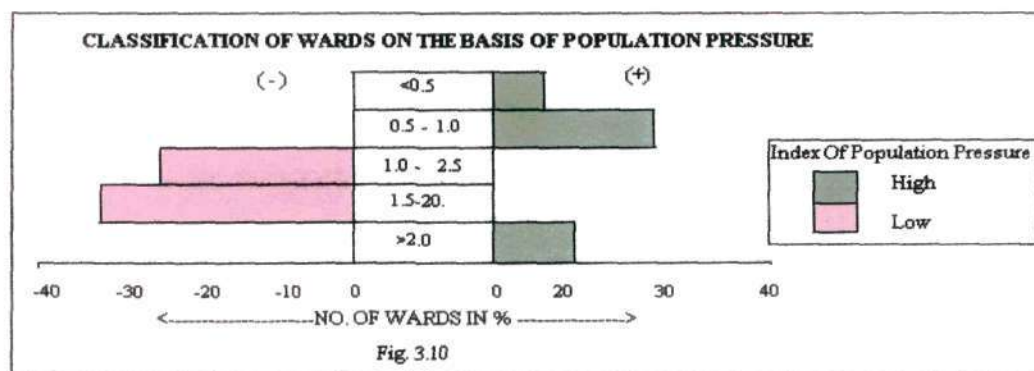


Table 3.8 DISTRIBUTION OF WARDS ON THE BASIS OF POPULATION PRESSURE

Index Of Population Pressure	Category	Percentage of Wards	Expected Population-Observed Population [E-O]	
			(+) Percentage of Wards (-)	
<0.5	Very low	4	4	-
0.5 - 1.0	Low	28	28	-
1.0 - 1.5	Moderate	32	-	32
1.5 - 2.0	High	12	12	-
Total	Very High	100	44	56

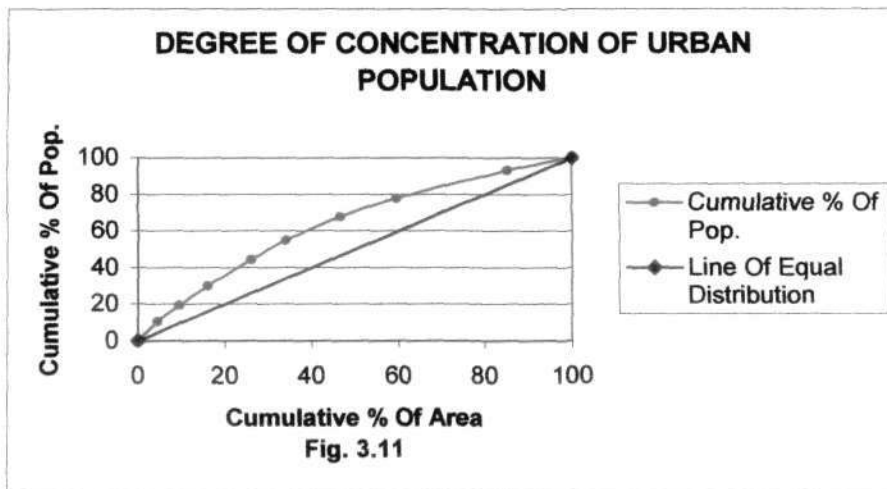
Index of population pressure indicates that wards situated at the peripheral region are characterized by low to very low pressure due to remoteness and non- availability of urban facilities. The observed pressure of population is more than expected pressure of population, which is found in the southern part of the municipality. Migration from both outside and from the C.B.D is common in this part. Observed pressure high (1.5-2.0) than expected pressure of population in the central part and mainly in the residential zones, which is shared by 32% of the total wards. About 12% wards is recorded very high pressure (>0.2) and this situation is found in the slum areas scatteredly situated among the residential zones.



By comparing the expected (E) and observed population (O) it can be said that about 44% of the wards shows positive pressure (Fig 3.10). It indicates that observed population of these wards are less than expected population. As these wards are much bigger in size, so a considerable percentage of people can be accommodated here. An exceptional situation is also developed, due to the recent trend of multistoried residential flat system in densely populated wards.

Pressure below the normal situation is recorded in the wards situated in the central and southern part, as these are already over crowded residential areas.

The ‘Degree of Concentration’ of population of Jalpaiguri in 2001 deals with the cumulative percentage distribution of two attributes (both population and area) at different points (Fig. 3.11). The deviation of the curve showing ‘Degree of Concentration’ from the line of equal distribution indicates higher concentration (63.75%) of population in relation to the total area.



3.5 GROWTH OF POPULATION

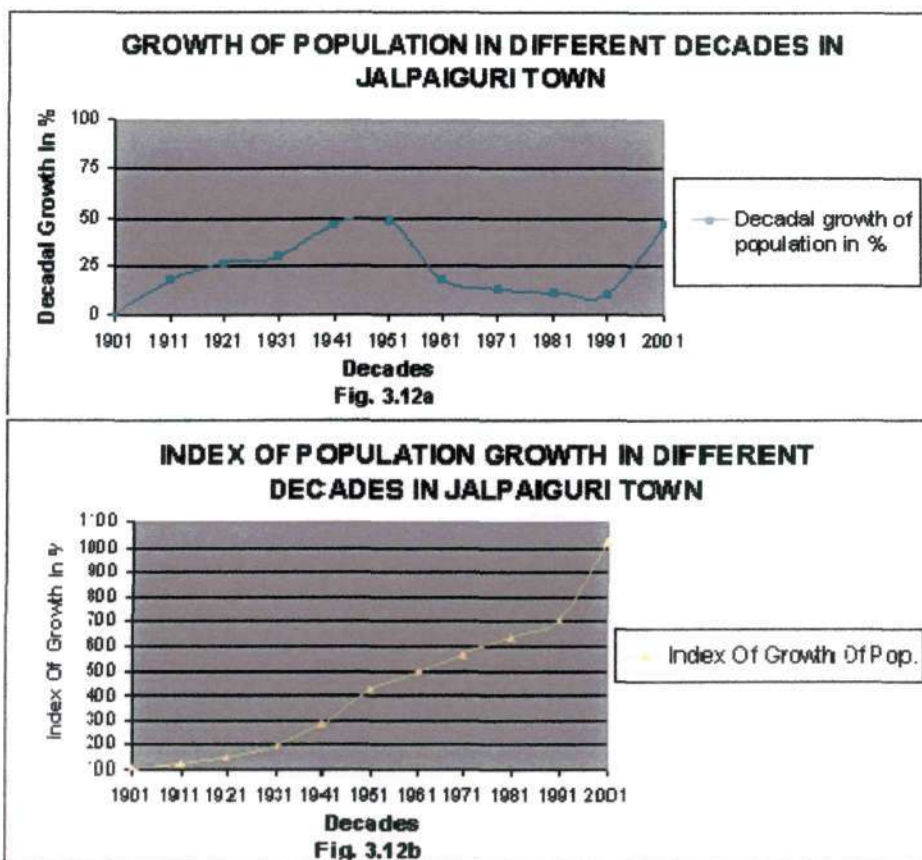
Growth of population has a great impact not only on its demographic character, but also in its socio-economic structure. It would also have a serious impact on the quality of life and environment. The term growth of population is often used in increasing or decreasing the number of inhabitants in a certain period due to natural increase and net migration. This is expressed as a percentage of the base population.

Jalpaiguri town had population of 9,708 in 1901 and 68,732 in 1991 and 1,00,348 in 2001. So, the population of the town has been increased by 7 times during the last 90 years and 10 times during the last 100 years. A study of absolute population and growth rates of population in percentage in the town can be made from Table 3.9

Table: 3.9 GROWTH OF POPULATION IN DIFFERENT DECADES IN JALPAIGURI TOWN

Population			Decadal growth of population in %		Index of Population growth in %	
Year	Jalpaiguri (M)	Jalpaiguri District (U)	Jalpaiguri (M)	Jalpaiguri District (U)	Jalpaiguri (M)	Jalpaiguri District (U)
1901	9708	10289	-	-	100	100
1911	11469	11765	18.1	14.3	118	114
1921	14520	14813	26.6	25.9	149	144
1931	18962	18962	30.6	28.0	195	184
1941	27766	27776	46.4	46.4	286	270
1951	41259	66145	48.6	138.2	425	643
1961	48738	123814	18.1	87.2	502	1203
1971	55159	168080	13.2	35.7	568	1633
1981	61743	311221	11.9	85.2	635	3024
1991	68732	2800543	11.32	799.85	707	27218
2001	100348	3401173	45.998	21.47	1033	38230

It is found from Table 3.9 that the decadal growths of population both in Jalpaiguri and district (U) have been positive. During 1911-1921, due to incidence of epidemic, famine and crop failure in India growth rate declined. But the scenario of Jalpaiguri town as well as the district was quite different. This is because the continuous emigration of rural people in search of food and job to the district town. As a whole both for the town and district the population growth rates decreased after 1951. People were not attracted to live in Jalpaiguri because of the low rate of development and lack of infrastructural facilities of the town. By this time Siliguri developed rapidly and attract more people. The population growth of Jalpaiguri town was very sluggish in compare to other urban centers of the district. But a continuous immigration took place during the communal disturbance in 1964 and liberation war in 1971 in Bangladesh. Again there was a sudden rise in growth rate (45.99%) during 2001. (Fig. 3.12 a & b) Field survey reveals that immigration from Bangladesh, Nepal, Bhutan, Assam and Bihar are still taking place. Two very large colonies were developed for the immigrants from Bangladesh namely, Mashkalaibari, Arabindra Nagar, Panda Para, Ashok Nagar etc.



In 1991, there were 19 wards in Municipality and they were located in an irregular manner. By analyzing the ward wise growth rate of municipality in 1991 onward it can be said that the people of backward classes who resided in the central places, sold their occupancy to businessmen and moved to the north eastern part of the town. During 80's vested lands of this part have been distributed among a large numbers of people, which also help to increase the growth rate.

Growth rate is low in C.B.D because commercial and residential-cum-commercial land use is more prominent here. Growth rate is high in slums situated in Paresh Mitra Colony, Mujibgar Colony (ward on 25), Paresh Mitra Nagar (ward no. 8) etc. Development in communication network and trade facilities attracted more poor people from rural area to settle in slums. Thus migration together with fertility and mortality become a fundamental element determining population growth and population structure in Jalpaiguri town.

3.6 LITERACY

Literacy rate plays an important role in determining the human resources of the people of any country. It also indicates the nature of infrastructural development of the states in general and the socio-economic conditions of the people. Literacy rate in India is widely varied due to availability of educational institution and economic condition of the people. The degree of urbanization creates social pressure, which educates the people and encourages in self-improvement.

According to 2001 Census, 79.90% (80,148) of the total population is literates, of which 52.71% (42246) is shared by male and 47.29% (37902) is shared by female population. The percentage of literates of the municipality (79.90%) is higher than the percentage of the district (54.04%). The decade wise rates of literates in percentage are given in Table 3.1

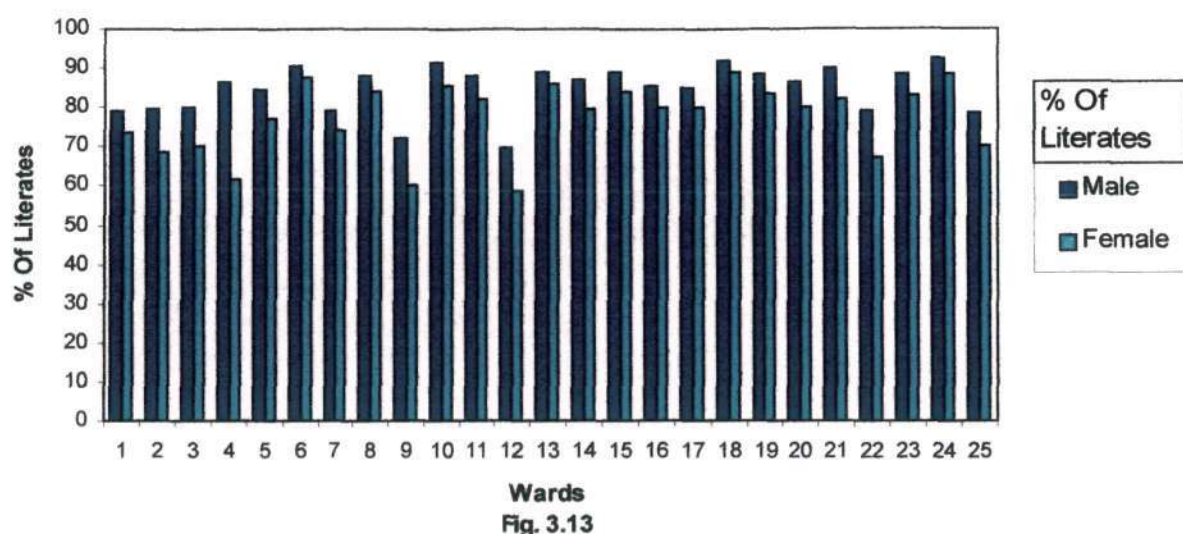
Table: 3.10 GROWTH OF LITERATES IN JALPAIGURI TOWN

Year	Literates In Percentage			Decadal Growth In %		
	Total	Male	Female	Total	Male	Female
1961	58.8	63.6	52.6	-	-	-
1971	61.2	64.1	57.9	+17.8	+11.9	+27.2
1981	67.9	72.5	62.9	+24.1	+18.9	+31.4
1991	71.08	54.29	45.71	+16.47	+13.58	+20.10
2001	79.90	52.71	47.29	+64.05	+59.28	+69.73

Source – Census 2001

The percentage of literates in every decade has been increased. But a low percentage of growth rate of total literates (16.47%) is found during 1981-1991. Growths of male (+13.58%) and female (+20.10%) literates are also recorded identical in the same decade. Again, a high percentage of growth rate of total literates (+64.15%), male (+59.26%) and female (+69.73%) are found during 1991-2001. A surprising feature of the data presented in the Table (3.10) is that, the progress of female literacy rate is higher than male literacy rate. Analyzing the ward wise distribution of literacy it is found that ward no 18 records the highest literates (90.56%), where as ward no 12 shows the lowest (63.90%) rate. Fig. 3.13 shows the ward wise distribution of male, female and total literates. The highest male literate found in new Circular Road, Deshbandhu Para and the other parts of ward no 24, where 92.48% of the male population is literate. And 69.56% of female population of ward no 12 (panda Para, Congress Nagar etc.) is literate which shows the lowest rate among the wards.

WARDWISE DISTRIBUTION OF LITERATES 2001



The actual literacy rate of municipality is higher (87.43%) than the actual literacy rate of the district (63.62%). As Jalpaiguri is a district headquarters as well as a urban centre, so the actual male literacy rate of the town (91.34%) become higher than the district (73.64%). And the female actual literacy rate (83.44%) also shows a higher percentage than the district (52.90%).

To find out the ward wise distribution of actual literacy rate, the number of 0 to 6 age group population are subtracted from the total number of population of each ward. On the basis of actual literacy rate the wards can be categorized as follows.

Table 3.11 DISTRIBUTION OF WARDS ACCORDING TO ACTUAL LITERACY RATE (2001)

Actual Literacy Rate In Percentage	Category	No of Wards	Percentage
<83.40	Very Low	7	28
83.40 - 87.40	Low	2	8
87.40 - 91.40	Moderate	5	20
91.40 - 95.40	High	8	32
>95.40	Very High	3	12

Source – census 2001

It is found from table 3.11 that the majority of wards (32%) are in high literacy group (91.40-95.40%). Among the wards the lowest percentage (8%) is shared by low category (83.40-87.40%). By comparing table 3.11 and Fig. 3.14 it is clear that the actual literacy rate is high to very high in the wards, situated in the central and southern parts of the town. These zones are basically residential in character. Actual literacy rate is low to very low in and around Dinbazar, which is the C.B.D of the town and the old part of the town, which is situated at the left bank of river Karala. This is because most of the males of this area are labourers and belong from low-income group families. The illiterate persons are either slum dwellers or migrated labourers.

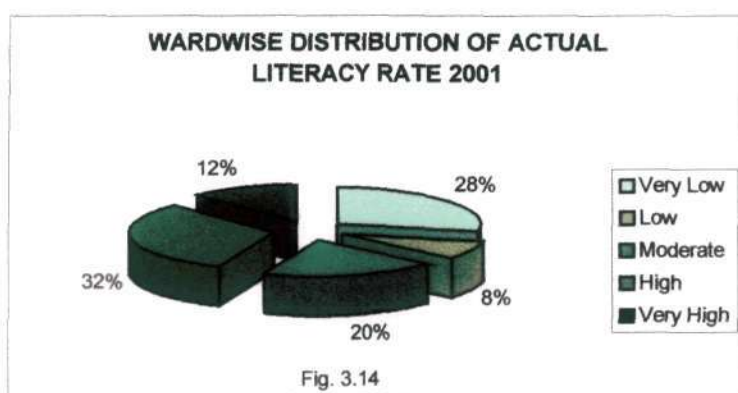


Table – 3.12 INDEX OF CONCENTRATION OF LITERATES

Index Of Concentration	Category	No of Wards	Percentage of wards
<0.90	Very Low	3	12
0.90 - 1.00	Low	6	24
1.00 - 1.10	Moderate	12	48
1.10 - 1.20	High	4	16

Source: Census 2001

Table 3.12 shows that about 16% wards is shared by high concentration group, but 12% ward is shared by very low concentration group, which is found in ward no 4, 9, 12. Fig. 3.15 shows that the Index of concentration of literates is high to very high in the central part of the municipality. Most of the boys and girls schools such as Fanindradev Institution, Government Girls High School, Central Girls, Sanaullaha Boys etc. are situated in these densely populated area and many private Bengali and English medium schools are also located here. All these schools are situated within the walking distance, and may be attained by rickshaw services.

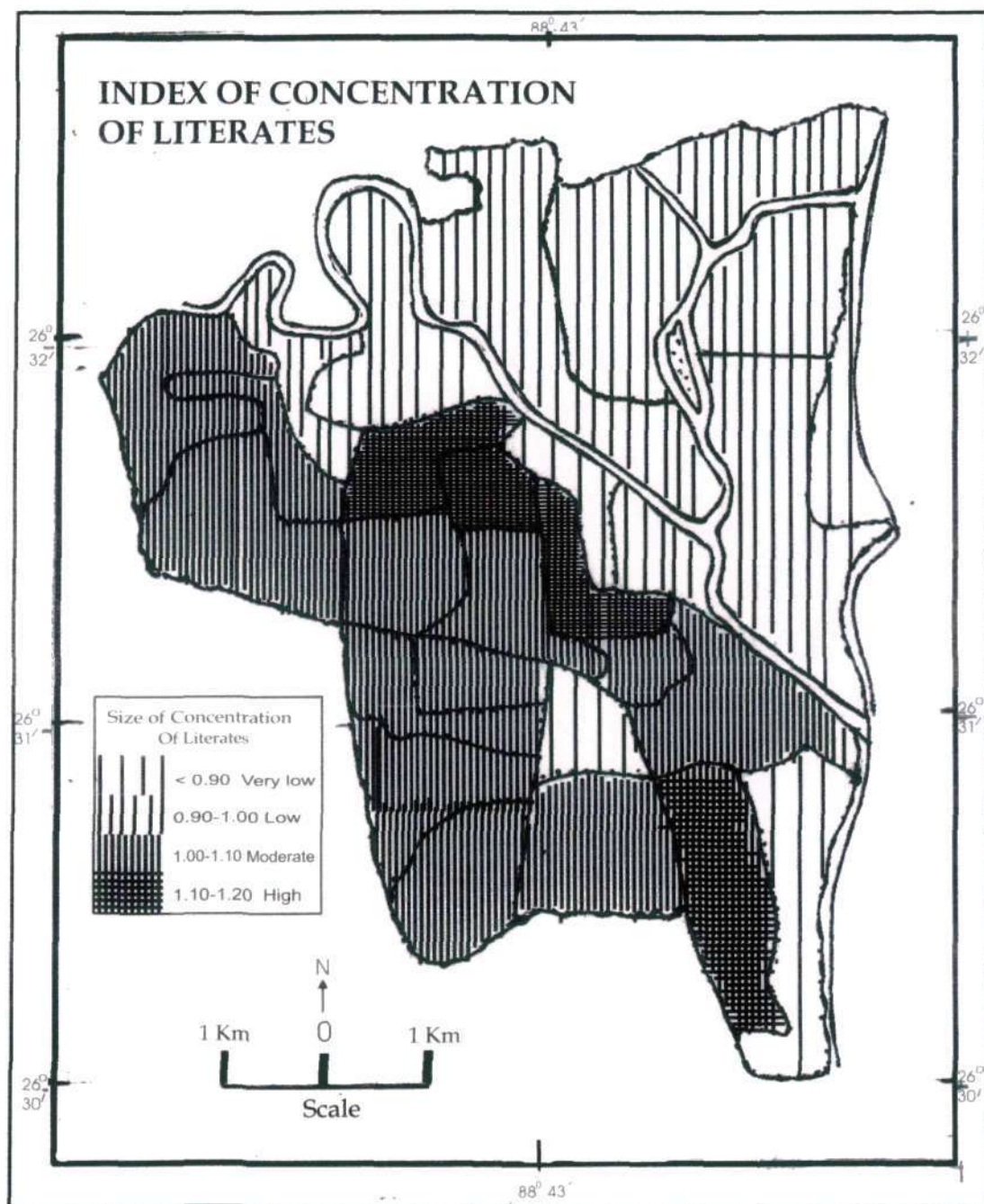


Fig - 3.15

This factor helps to increase the rate of concentration of literates. Index of concentration of literates is low in Dinbazar, M.G. Road area (under ward no 4), which is known as the C.B.D of the town. Slums those are situated near C.B.D are occupied by poor people. In poor families, a child is considered as a source of additional income, so the children are put to work at an early age, which reduce the rate of concentration of literates. A slum, occupied by the Muslim people is found in Plkhana region (ward no 9), where females are mostly illiterate. The enrolment rate of school children is low and the rate of school dropout is high. Most of the adult-labourers and small businessmen are also illiterates.

3.7 RELIGIOUS STRUCTURE

India shows multiplicity of religious faiths. India has witnessed the successive penetration by other religious people say Islam, Christianity etc. People of different religions live together in Jalpaiguri town. In 1981, the percentage of Hindus was 96.4 against 96.7 in 1971. Muslims shared 2.7% of total population. This increase during 1971-81 was due to migration from Bangladesh. The growth of Hindus during 1981-1991 was 22.55%. Hindus are account for 87% of the total population of the town. They are distributed in almost all parts of the town, except a few pockets. During field survey it is found that the major residential areas like Ananda Para, Ukil Para, Natun para, PandaPara, Arabindra Nagar etc. are dominated by the Hindus. The Muslims are small compared to Hindus, and they are concentrated near Puratan Masjid (ward no 15) Kamar Para (ward no 6), Muslim Basti in Pilkhana (ward no 9) etc. area in the town. The Christians are found in Race Course Para, BhanuNagar (ward no 10), Hakim Para (ward no 3) area. It is also found that the numbers of Muslims are increasing day by day due to the continuous immigration from Bangladesh.

3.8 FAMILY SIZE AND OCCUPATIONAL STRUCTURE

3.8.1 Family Size

Field survey reveals that out of 200 surveyed families 38% families are small (<5 members / family), 52% families are large (5-10 members / Family) and 10% are very large (>10 members / Family). Very large families are observed in the slum areas of the town. Large families are concentrate in the colonies developed by the immigrant from Bangladesh in Panda Para, Mashkalaibari area and immigrants from Rajasthan and Bihar in the C.B.D area of the town.

COMPOSITION OF WORKERS (2001)

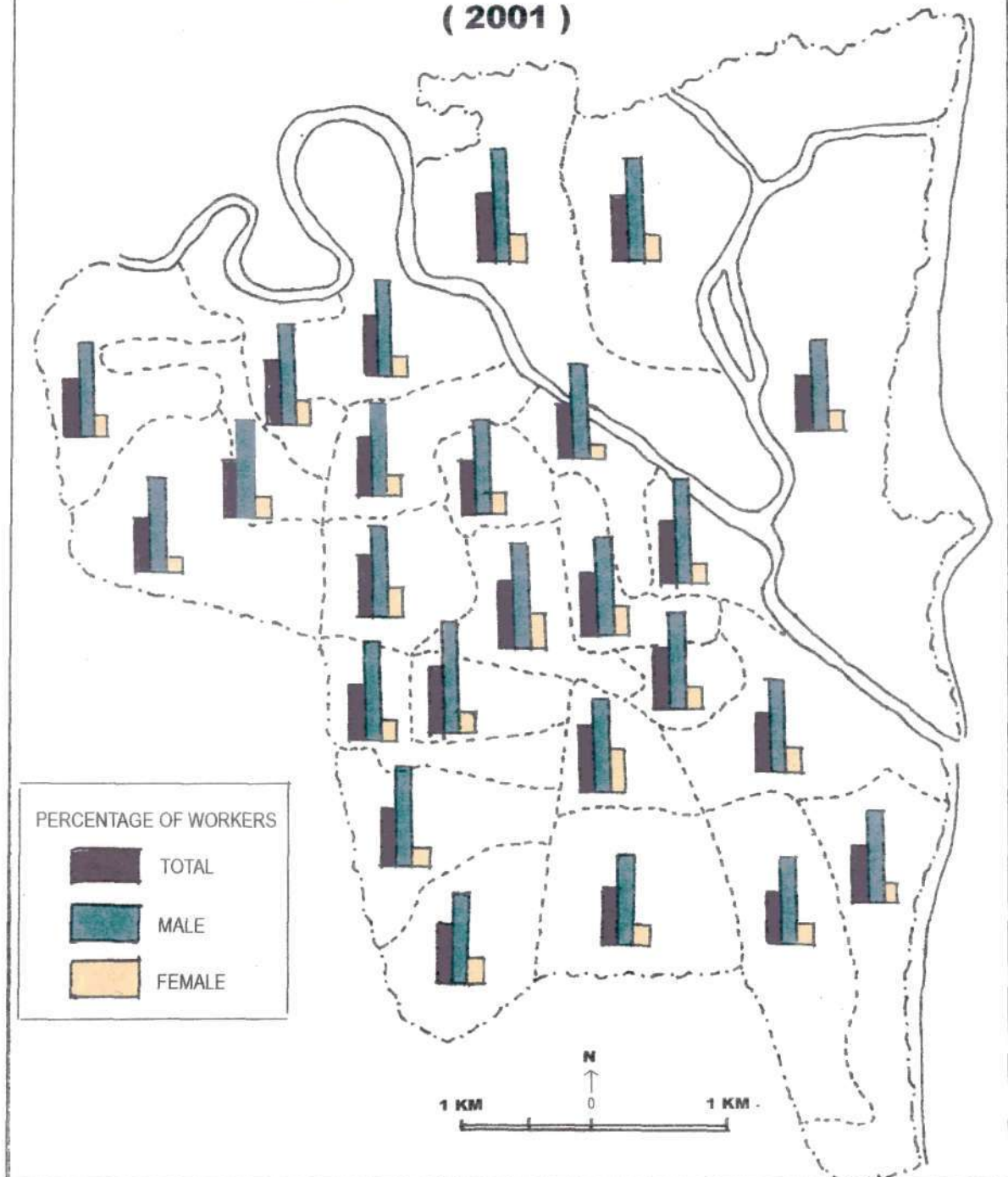


Fig 3.16

3.8.2 Occupational Structure

Occupational structure of any country helps in assessing the growth and modernization of their economy. Occupation reveals the nature of economic progress of a country. It depends upon the degree of economic development and sophistication of a country (Ghosh 1985). The total population of a country may be divided into two categories: – the working and the non-working population. The working populations are those who are normally employed including temporarily unemployed population. The non-working population or inactive population is composed of children, retired persons, house wives, and those living on rents, pensions etc. The proportion of a population that is economically active is an important factor, which affects the entire stream of production. Table 3.13 shows the trend of work force participation rate in Jalpaiguri town from 1981 to 2001

Table 3.13 WORK FORCE PARTICIPATION RATE

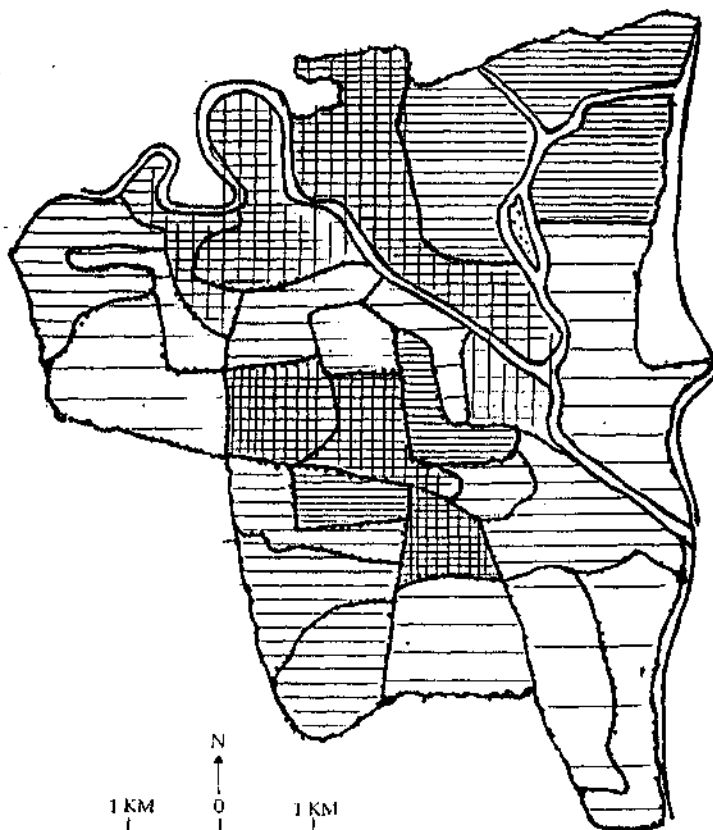
Years	Workers In Percentage (%)
1981	29.28
1991	29.80
2001	33.20

The work force participation rate has increased from 29.28% in 1961 to 33.20% in 2001 in the town. So, it is found that, workers share about 33.20% of the total population of the town and non-workers share rest 66.80 %. It is also found that, male & female workers share about 53.32% and 12.52% of the total male and female population respectively. Fig.3.16 shows the ward wise composition of male, female and total workers of the town. The highest male worker (61.0%) is found in ward no1 and lowest (45.05 %) is found in ward no 10. The highest female workers (24.16%) and lowest (8.65%) are found in ward no 12, and ward no 20 respectively.

Table- 3.14 NUMBERS OF WARDS IN DIFFERENT CATEGORIES OF WORKERS IN JALPAIGURI TOWN (2001)

Index Of concentration	Category	Percentage of wards
<0.90	Very Low	8
0.90-0.95	Low	20
0.95-1.00	Moderate	32
1.00-1.05	High	12
>1.05	Very High	28

INDEX OF CONCENTRATION OF WORKERS (2001)



Size of Index Of Concentration Of Workers

	< 0.90	Very Low
	0.90- 0.95	Low
	0.95-1.00	Moderate
	1.00-1.05	High
	> 1.05	Very High

Fig - 3.17

Table 3.14 shows that about 28% wards is shared by very high concentration group but only 8% wards is shared by very low concentration group. The highest percentage of wards (32%) is shared by moderate category. Fig.3.17 shows that, the Index of concentration of workers is high to very high in and around the main commercial area like Dinbazar, Kadamtala, Beguntary and in areas like Netaji Para, Raikat Para, Walkerganj where labourers and marginal workers are dominant. Concentration of workers is also high in slums like Indira Colony, Dinbazar Badambasti, Boilkhana Basti, Harijan Basti, etc. Index of concentration of workers is moderate in the residential zones situated around C.B.D. At the southeastern corner of the town, concentration of workers is very low, due to remoteness and absence of commercial activities.

The term 'occupational structure' refers to division of working population in different occupations such as:- Primary, Secondary, and Tertiary Sectors. No doubt, it is a dynamic factor. Table 3.15 is showing the percentage of working population involve in different economic activities in Jalpaiguri Town in 2001

Table 3.15 ECONOMIC ACTIVITIES OF JALPAIGURI TOWN IN 2001

Types Of Economic Activities	Percentage Of the Total Working Population	
Primary Activities		
Cultivators	0.39	} 0.59
Agricultural Labourers	0.2	
Secondary Activities & Tertiary Activities		
Household Industries	1.77	} 94.51
Other workers	92.74	
Marginal Workers		4.90
Total		100.00

Source census 2001

According to 2001 census, 0.39% & 0.2% of the total workers are shared by cultivators and agricultural labourers respectively, which is occupied by 0.59% of the total workers. It is also found that 1.77% of the total workers are engaged in household industries like Cane Industry, Bidi buinding etc. There are a small numbers of marginal workers (4.90%) which includes housewives, students, labourers etc. The highest percentage (92.74%) of workers is found in other services, which includes several types of government and private services, business etc.

3.8.2.i Earning Members And Occupational Structure

Considering the earning members of each family, it can be said that 38% of the families have one (1) earning member, 46% families have 2 or 3 earning members and 16% families have more than 4 earning members (Table 3.16)

Table: -3.16 EARNING MEMBERS OF THE FAMILY

Earning Members in no.	Families in Percentage
<2	38
2-4	46
>4	16

Source: - Field Survey

It is found during field survey that ward has the highest number of families with one earning member in each family and they are mostly engaged in service both private or public. Families having 2 or 3 earning members is dominant in the residential areas around C.B.D. Among these earning members a major portion is engaged in business. More than 4 earning members in a family is common among the slum families. They are mostly work as labourers in both formal and informal sectors of the town.

Table: -3.17 OCCUPATIONAL STRUCTURE

Types Of Occupation	Earning Persons in Percentage
Formal Sector	
Government Service	25
Private Service	27
Business	41
Informal Sector	
Skilled labourers	2
Unskilled labourers	5
TOTAL	100

Source:- Field Survey

It is evident from Table 3.17, that 52% of the earned people is engaged in service both government / semi-government (25%) and private (27%). Families of service holders are maximum (> than 75%) in wards like 7, 8, 17, 18 & 19. The service holders are concentrate in these wards to enjoy easy accessibility of their work places, which are scattered around C.B.D and mid-eastern part of the town, and also due to the existence of government housing complex

for service holders in ward no 8. In C.B.D. area (ward no 4, 5, 6) the percentage of businessmen is high (>50%).

3.8.2.ii *Changes In Occupation*

High growth of labour force due to falling death rate and growing birth rate was a hindrance to changes in occupational structure. It is found that in 1961, the cultivators occupied only 2.06% of the total workers, where as a decreasing trend is found in 1991 (1.5%) and in 2001 (0.4%). But there was an increase in agricultural labourers from 1961 (0.58%) to 1991 (1.64%). This is due to the migration of people from Bangladesh. Again the percentage of agricultural labourers (0.2%) decreased in 2001. It is also found that the percentage of workers in mining and quarrying activities is also decreased [from 4.13% in 1961 to 0.09 % in 1991].

By comparing the occupational structure it can be said that in 1991 7.74% of the total workers are engaged in primary activities where as in 2001 it has been decreased to 0.59%. But there was an increase in secondary and tertiary activities from 1991 (91.82%) to 2001 (94.51%). As the nerve center of economic activities of the district, Jalpaiguri town provides a center for tertiary activities which feature the fastest growing segments or modern economics today.

3.9 SLUM POPULATION

Most of the Indian cities today have slums or slum-like conditions. There is hardly any city in India without slum component (Tewari, H.R., 1999). In this study a slum household is considered as a household located in a slum settlement in which people live below poverty level.

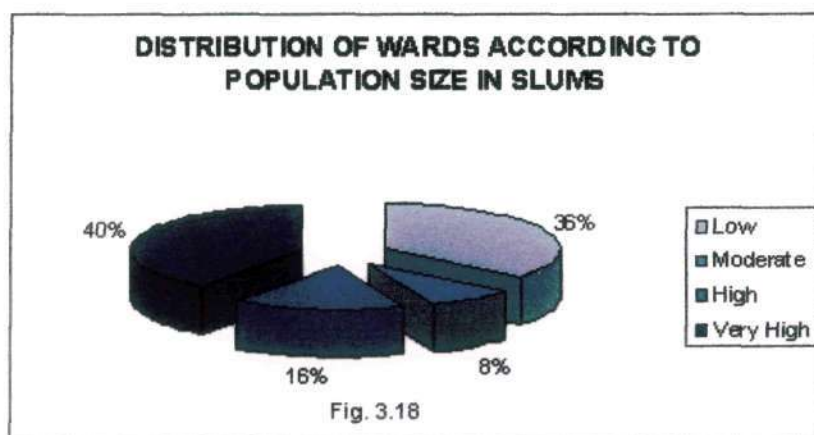
3.9.1 Distribution of Slum Population

According to municipal report (2001), 30 slum pockets comprising 7474 slums population are situated scatteredly among the wards. The highest slum population (4339 persons) is recorded in ward no 2, and the lowest (487 persons) is recorded in ward no 6. The average slum population of the town is 1380 persons. On the basis of population size the wards can be classified as follows.

Table 3.18 DISTRIBUTION OF WARDS ACCORDING TO SLUM POPULATION SIZE IN JALPAIGURI TOWN

Population size	Category	No of wards	% of wards
<1100	Low	9	36
1100-1200	Moderate	2	8
1200-1300	High	4	16
>1300	Very High	10	40
		25	100

Source: - On the Basis of Municipal data



Majority of the ward (40%) is shared by very high slum population (>1300 persons). These wards are situated in central business district and at the peripheral region of the town, such as Indira Colony, Bhatakhana, Walkerganj, Bihari Basti, Paresh Mitra Colony etc. About 36% of the wards of the town has low slum population (<1100 persons), those consists of Subhash Unnayan Pally, Dharapatti etc.

3.9.2 Family Size

Field survey reveals that out of 100 families only 4% is shared by very small category (<than 4 members) family size is small (2 adults/ 3 children) in those which is shared by 32% of the total slum family. Out of 100 families 20% belongs to very large family-category. Large families are mostly joint families having 8 to 13 members.

Table-3.19**FAMILY SIZE IN SLUM AREA**

Family Size (no. Of Members)	Category	No. Of Families	Percentage Of Families
<4	Very Small	4	4
4-6	Small	32	32
6-8	Medium	28	28
8-10	Large	20	20
>10	Very Large	16	16

Source:- Field Survey

3.9.3 Composition of Slum Population

In Jalpaiguri town, the total number of males and females on the slums are 3678 and 3796 persons respectively. Males are dominant in Gorumara Basti and females are dominant in Bhatakhana area about 59% (405 out of 681 persons) or the total slum population is shared by adults, and 41%(276 out of 681 persons) is shared by children. The number of adults increases with the increase of the numbers of family members.

3.9.4 Caste And Religious Structure Of The Slum Population

Field survey reveals that the Schedule Caste (341 persons) and General Caste (338 persons) shared 50% and 49.71% of the total slum population of the town. Only 0.29% is shared by Scheduled Tribe population, which is found only in Parashmani Nagar (ward 8).

Table- 3.20**CASTE STRUCTURE OF SLUM POPULATION**

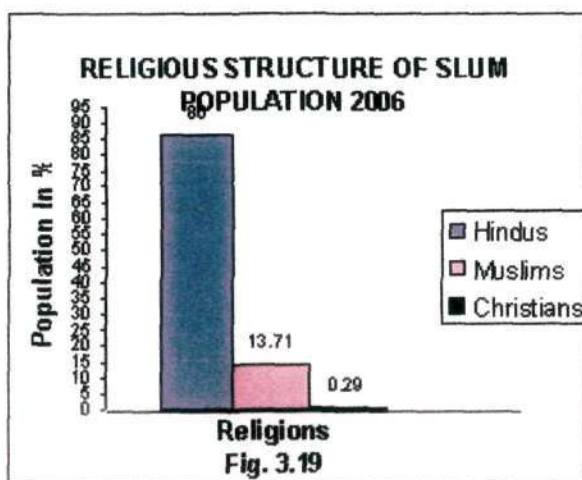
Caste Category	No	Percentage
General	338	49.71
Scheduled Caste	341	50.00
Scheduled Tribe	2	0.29
Total Population	681	100.00

Source:- Field Survey

Out of 100 families the highest S.C. population (24 persons) is found in Pan Para, Seshbati Lane, Panda Para etc (ward no. 15), and the lowest (2 persons) is found in ClubRoad, Nayabasti area (ward no. 8), which is shared by 75% and 25% of the total population of these wards respectively. The highest general population (35 persons) in slum area is found in Santi Para, Arabindra Nagar, Paresh Mitra Colony (ward no 25). The lowest general population (3 person)

is found in Raikat Para, Walkar ganj area (ward no 2), which is shared by 70% and 16% of the total population of these wards respectively.

In the present study it is found that the percentage of Hindus (86%) are far higher than other religion in the slums, which is followed by Muslims 13.71% (94 out of 681 persons). The Christians share the lowest percentage (0.29%) Muslims are dominant in Pilkhana, Muslim Basti (ward no. 9), Kamar Para (ward no 6) etc, and Christians are found in Parasmani Nagar (ward no. 10). Fig. 3.19 shows the religious structure of slums.



3.9.5 Literacy

It is found during the field survey that 33% (226 persons) of the total surveyed slum population is literate and 67% (455 persons) is illiterate. This is because, many parents cannot afford to send their children to school. The percentage of female literates (48%) is lower than male literates (52%) in the slums of Jalpaiguri town.

3.9.6 Occupational Structure of Slum Population

According to field survey 225 persons out of 681 surveyed population are engaged in earning bread for their families, which contributed only 33% of the total slum population. The majority of slum population (50%) is engaged in informal sector of occupation. Some of them are unskilled labourers work as rickshaw pullar, household labourers, maidservants etc. Some skilled labourers are engaged in carpentry, plumbing, electrical works etc. Slum people are also engaged in small business like pan shop, tea stall, grocery shops, fish and vegetable selling etc. Vendors like phoochkawala, Ice cream seller are also contributed to the business activities of

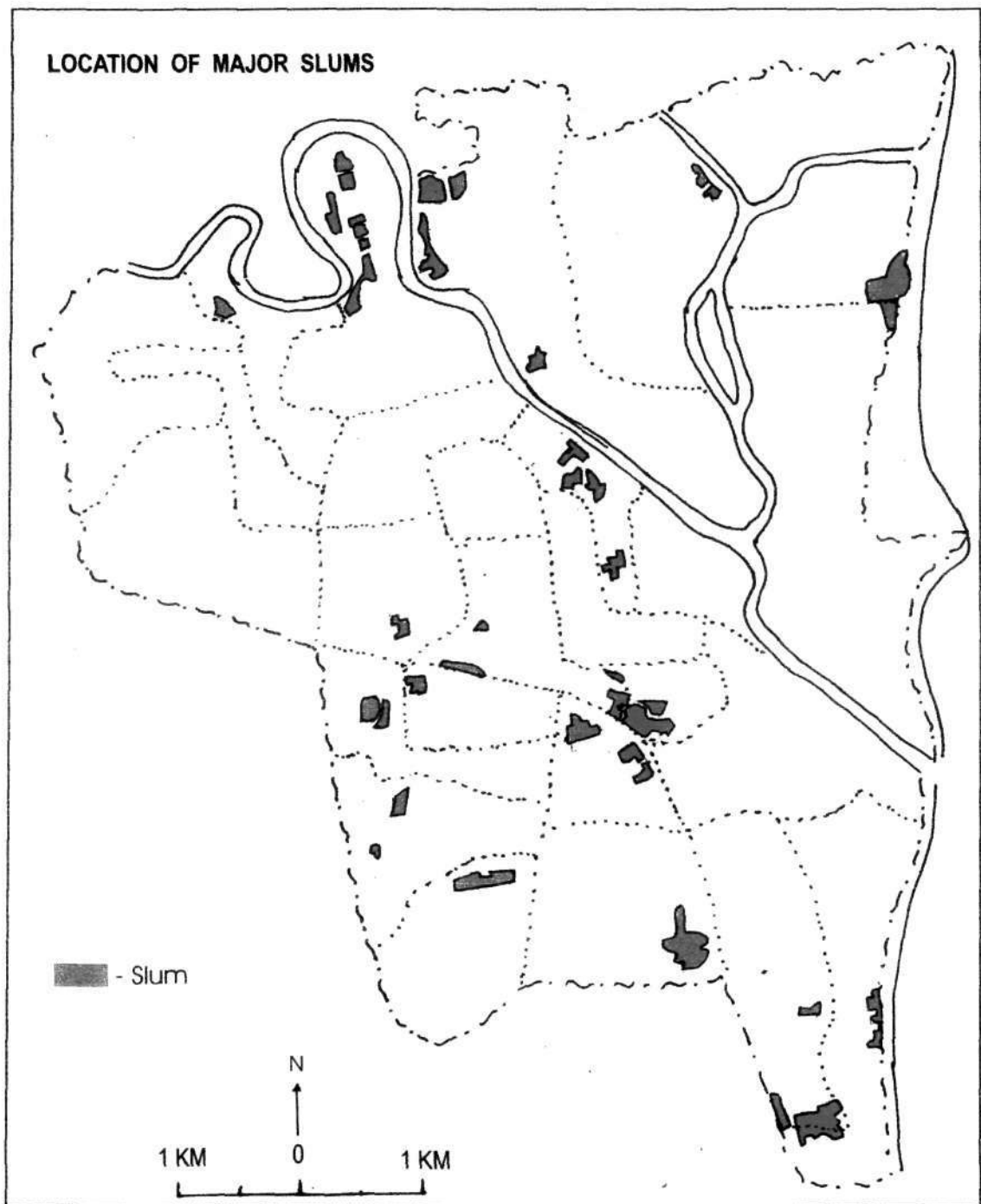


Fig - 3.20

slum people. It is also found that the majority of slum dwellers are found to be engaged in occupations, which are different from their parental occupations. The slum dwellers are considered as the weaker section of the society. Fig.3.20 shows the distribution of major slums in the town.

CONCLUSION

The overall study reveal that, the population of the town is increasing day by day, which is responsible for the continuous pressure of population to the urban fabric of the municipality. The composition of population shows that the female sex ratio is increasing in the town, which is higher than district average. It indicates that most of the people live in the town with their families. Because Jalpaiguri is a district headquarters, which has more service opportunities. A continuous increase of female ratio has been noticed in different decades in the town due to flow of refugees and female workers from the neighboring areas and Bangladesh. During 1760's, Raja Jayanta Deva shifted his capital and established 'Rajbari,' which is situated in present ward no 1. As the Raikat kings were belong from scheduled caste community, so the early settlers mainly the scheduled caste population resided in this part and on the natural levee of either Tista or Karala. But after independence, with the expansion of the town, some of scheduled caste people also shifted to the main town and now a very high concentration is found at the peripheral wards of the town. Scheduled tribe population is not found in the main commercial and residential area of the town. The density of population is increasing positively due to continuous immigration from outside the town. High density of population is found in residential area located in the central part. After independence large influx of refugee population colonized in less suitable areas such as Panda Para. Arabindra Nagar etc, where at present density is also high. Very high density is found around C.B.D and specially in slum pockets of the town. Nearness to C.B.D and easy communication system have resulted the concentration of job seeking people around C.B.D. High pressure situation were developed by displaced persons and immigrants in the fringe area of Jalpaiguri Town. Growth rate is low in C.B.D because a significant percentage of residential houses have been transformed to shops or offices.

The wards situated in the central part are densely populated besides having smaller area because, these are mainly residential wards, and the socio-economic condition of the people is high so, they are well aware of the necessity of education. And economically they are more capable of imparting education to their children. But in slums poor economic condition of the people drive them out of the school. So, school drop out rate become high.

This change involves a transfer of working force from primary to secondary and tertiary activities. In fact the majority of the labourforce is involved in both formal and informal market transactions in retail outlets. This labourforce is often involved individually or with family as paddlers, vendors, street hawkers, shoemakers or tailors with many other activities. It can be said that reduction in primary work force indicate economic development of the town. From the over all discussion it can be said that, the high growth rate of population creates immense pressure on existing land, water and other resources. They affect the living standard of the people due to non-availability of essential services and commodities.

CHAPTER – IV

URBAN MORPHOLOGY AND CHANGES OF LANDUSE

INTRODUCTION :-

The term 'urban Morphology' refers to the physical arrangement or structure of a town, its pattern of streets, buildings, their different functions, densities and layout. The morphology of any city is dynamic in nature. Definite zones for different urban functions are found in the city landscape. Moving across the city, one passes from one zone to another with change landscape and socio-economic environment (Ghosh. Sumita, 1998). The urban morphology is determined by a number of predetermined general principles of land use and location. The morphology of any city is dynamic in nature.

The geographical setting of a town is of great importance in determining its morphology, quality of urban environment and also stimulating its further growth. The every change of altitude affects the flood history of a particular locality, and the river, which flows near the locality become the main source of water for this town as well as its main drainage and sewage channel. Primarily this affects the urban fabric. According to J.E.Brush (1960), interpretation of morphology is necessary not only to understand the relationship of the town to its site and situation, but also to identify the historical and social influence on its evolution. He also said that the interpretation of the morphology of Indian cities begins with mapping the existing layout to streets, the arrangement and characteristics of buildings, and the associated pattern of land use. Cities are continuously changing their land cover as old buildings are replaced with new structures and as rural land is converted to urban uses. It can be said that, the plan of a city, and its urban landscape are the results of past and present socio-economic processes. Generally the main commercial area lies on a part of the city and the competition for space leads to varying land values, which helps in the change of urban morphology. Technological development, continuous immigration and social segregation in the city also affects morphology.

The processes responsible for the spatial variation in urban morphology should be studied in the light of their inter relationship with functions. Specialization of activities in a specific area, so common in the western cities, does not take place in most of the Indian towns and cities. In Indian cities the diverse uses are mixed up in a small area. The western models of urban land use that necessarily imply segregation around C.B.D are not in general useful in India. Whereas, the western cities have different areal zones with consolidation of one single activity in each one, the Indian cities have different areal blocks with several activities in each one. The Indian cities are also differing from western cities, as there is no clear-cut segregation of commercial activities from other major functions. The old indigenous city or urban area evolved through a larger process of history usually in non-modern period and mostly in an unplanned way [Singh, D.P, Pandey. D.C, Tiwari P.C. 1999].

4.1 Application of Models

Traditional models relating to the growth and structure of town is partly applicable to Jalpaiguri town. The classical models deal with the internal structure of cities. According to the Burgess's Concentric Zone Model (1923) cities expand outward from the city centre (C.B.D) by creating concentric rings of commercial, transitional, residential of lower and higher income group respectively this concentric zone model was based on the land use pattern of Chicago, which is partly applicable in the early stage of development of some Indian cities as well as Jalpaiguri town. The other classical Models i.e. the Sector theory of Homer Hoyet (1939), Multiple Nuclei Model of Harris and Ullman (1945) are not applicable to Jalpaiguri town as there is no distinct pattern of sectors for specific land use in the town. Differential land use patterns around several commercial centers as per Multiple Nuclei Model is not possible in the case of Jalpaiguri as the town has only one commercial centre (Dinbazar). Robert. M. Haig (1926), R. Ratcliff (1949), William Alonso (1969), analyzed the pattern of urban land use according to the principles of bid rent to the land-values, land use and land use intensity. This theory helps to understand the outward expansion of Jalpaiguri town. The central part of the town has less land for more people as demand and land value both are high in the business area, which results in multistoried buildings and slum area around Dinbazar and more spacious houses are occupied by single families at the fringe as stated in this model.

With the help of satellite remote sensing the 'Global Model' of urban Morphology (Ridd, Merrill. R and Card. Don. H, 1992, I.G.C abstract, p-531) can be used to understand the urban landscape. The V-I-S Model (Vegetation-Impervious Surface-soil) shows the central business district is almost completely composed of impervious surface, which decreased outward. At the periphery more vegetation or more bare soil is found than the core, which is comparable to the townscape. Land values, family income and demographic patterns are usually related to V-I-S composition (Mondal.R.B). Those have an indirect effect on urban land use. According to Colby, 'Dynamic theory' the pattern of land use is the result of centripetal force that drawn the residents and business class people in the town, and also drawn people towards C.B.D from fringe and the centrifugal force that drive people and business away from the C.B.D into the outlying suburbs. This model is helpful to analyze the early expansion of the town. A new model suggested R. B Mondal (1989) is more helpful to analyze the morphology of Jalpaiguri town as well as any Indian city. According to his 'Anti Polar Concept' the market oriented development facilities helped in increasing intensity of land use near the C.B.D (Dinbazar), which decrease to the fringe. The central part of the town is occupied by central business area followed by light manufacturing, residential zones. Lastly, area of open space, agricultural fields, administrative centers are found while going away from the centre of the town. So, it can be said that the American-European patterns are existent only in Indianized forms (Fig. – 4.1).

DEVELOPMENT OF THE TOWN IN CONCENTRIC ZONE FORM

The town depicted the concentric zone form in the early stage of its developmental process. The C.B.D (Dinbazar) consists of financial organizations with retail outlets. In the earlier period up to 1950, the town grew around this commercial center in a more or less concentric form. People of higher income group occupied the large plots at the fringe. Later with further expansion it revealed a semicircular form as river Tista restricted the expansion of the town in the east. The changes in the circulations of water, energy and materials produced by urbanization alter the landscape of the town.

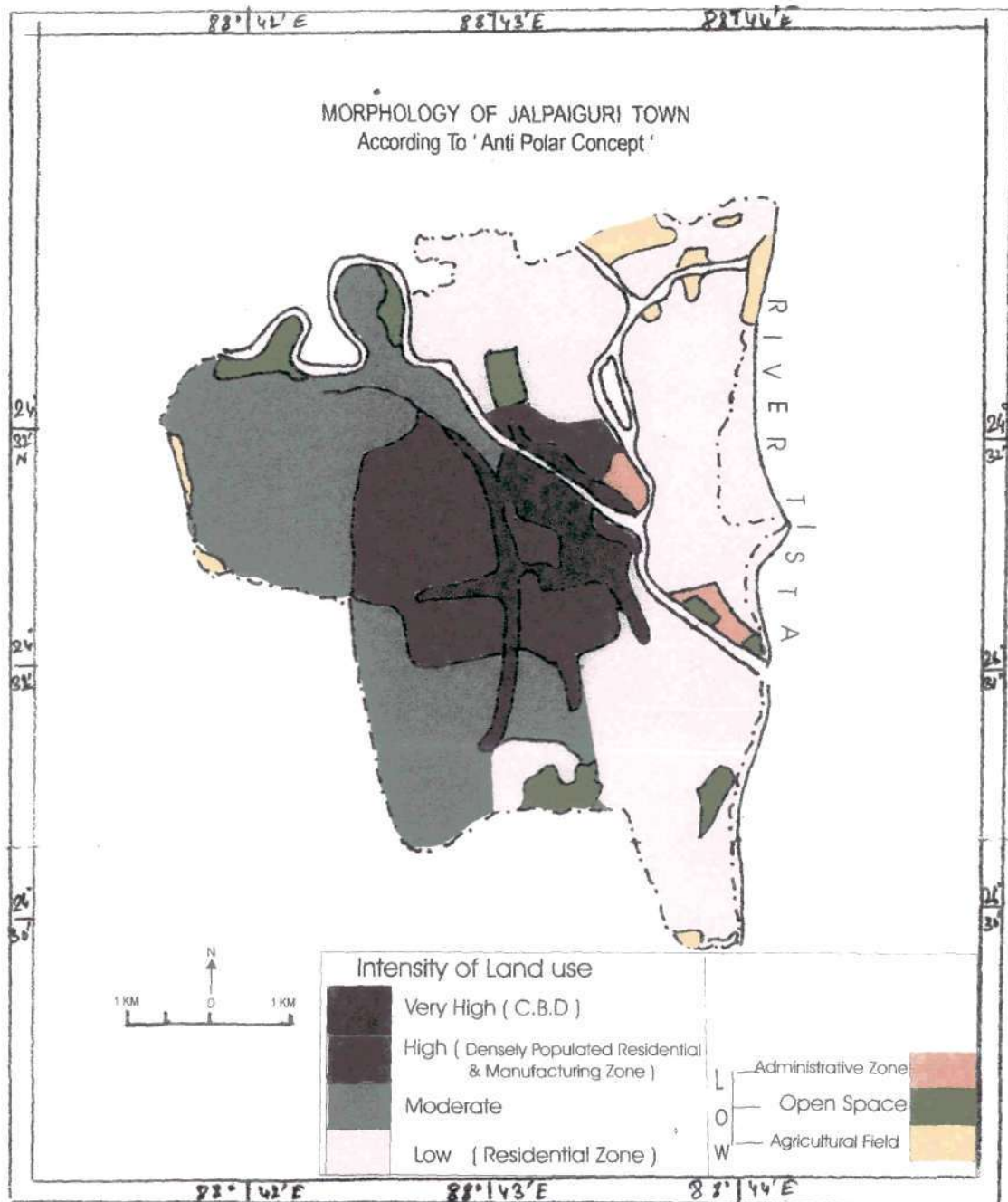


Fig - 4.1

**LAND USE PATTERN
OF JALPAIGURI TOWN
1900**

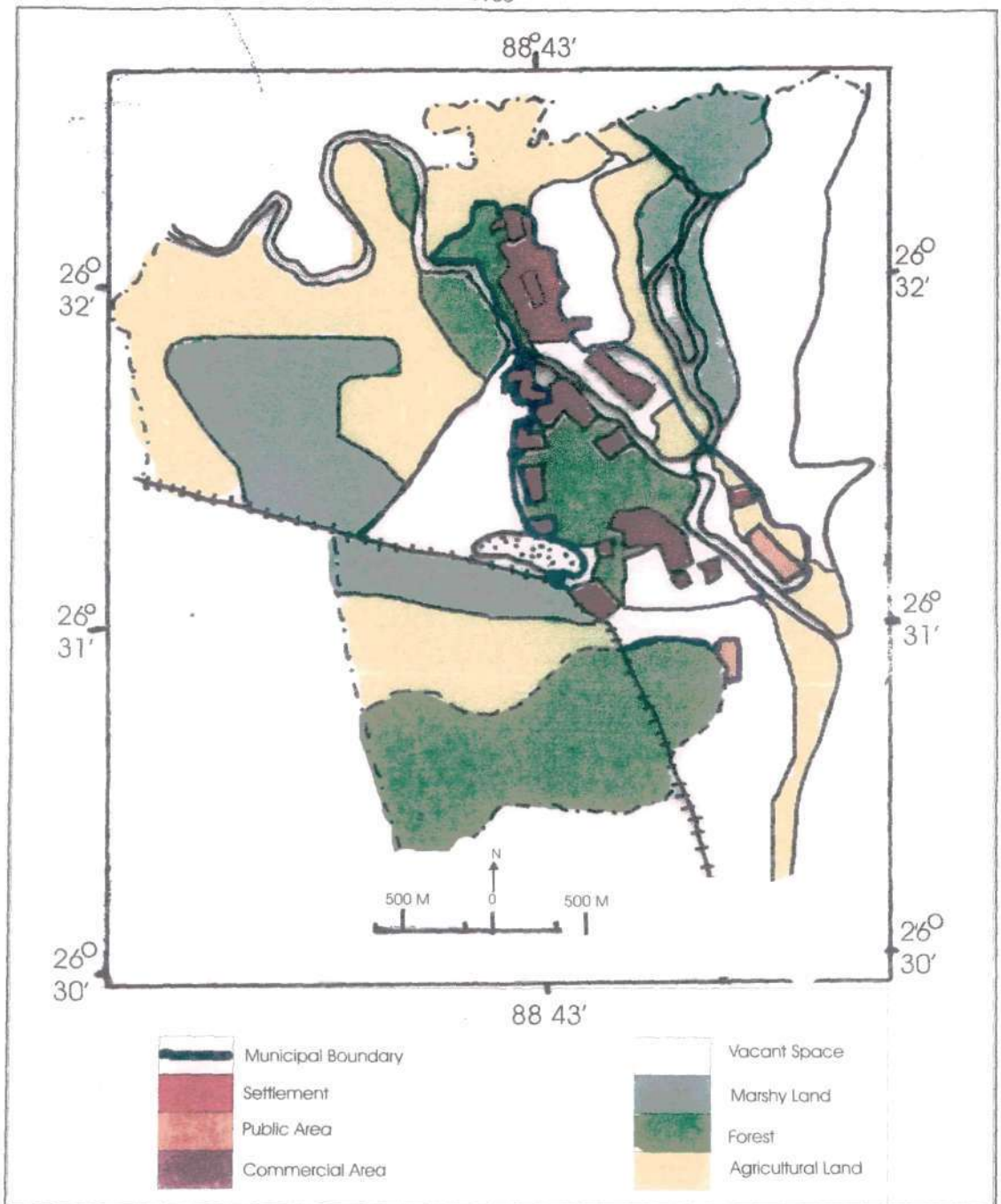


FIG - 4.2

4.2 CHANGING MORPHOLOGY OF THE TOWN

The present morphology of the town is an example of an unplanned old Indian town, with narrow lanes, crowded shops and densely populated residential areas. The C.B.D areas developed in the heart of the town, is still maintaining its prominence. The slum areas are scatteredly distributed over the town specially in C.B.D area and along the railway line.

4.2.1 Jalpaiguri Town In 1900

During the formative stage, the land use of Jalpaiguri town was characterized by the presence of jungle, marshy land and paddy field. According to Hooker many paddy fields were present in the midst of the settlements. By the beginning of the last century, the urban appearance of Jalpaiguri becomes visible with the population reaching to 10000 persons. A small commercial area was situated at Dinbazar. The only one industry, Mohini Mill (Cotton Mill) was established by Surendra Sanyal (1924) in Silpa Swamity Para. The main residential area was concentrate at the east of river Karala near Rajbari and in Raikat Para, Hakimpara area. At the right bank of river Karala the residential area was scatteredly situated around Dinbazar- Ukilpara area, Babu Para-Telipara area. Administrative units i.e. Head Post Office, Kutchary (court), Municipal office were the only brick built offices at that time, situated south-eastern part of the town. Other public offices were Kuncha houses, with tin or thatched roofs. The major roads of the town i.e. Jalpaiguri – Mainaguri Road, Kadamtala- Chaulhati Road and Kadamtala – Haldibari Road were narrow and unmetalled. Other roads were found in Hakimpara, Hospital Para, Babu Para area, those are also very narrow and unmetalled. The railway service was connected the town with Calcutta and Siliguri in 1877 and 1878 respectively and the Railway Station along with railway track was located at the southeastern boundary of the town. Between Railway Station and Rajbari there was huge Rubber plantation and at the north of the Rajbari there was a large mango groves. Rest of the town is covered with marshy land, water bodies and grassland. Dumping ground of the town was located along the railway line at the southwestern part of the town. Fig. 4.2 shows the land use pattern of Jalpaiguri town in 1900.

4.2.2 Jalpaiguri Town In 1951

By 1951, the population of Jalpaiguri town reached up-to 41259 persons, and with this rapid growth of population the land use pattern has also been transformed from agrarian look to urban look. In Natun Para, Pahari Para, Samaj Para, Silpaswamiti Para, Ananda para area previously

covered jungle or paddy fields were converted into residential area. Immigrants were compelled to settle in the former marshy lands. Arable lands in the sub-urban areas i.e. NewTown, Bose Para, SantiPara, Bawbazar etc. Before 1950's one storied buildings with Kuncha roofs (Tin roofs) are predominant. Several new roads were constructed to link up the newly developed residential areas in an irregular manner. Most of these roads were narrow and crooked and interlinked with each other. At the north of Rajbari, western part of the residential area and left side of railway track arable lands were still predominant. Wetlands were still exist at the left of the newly developed residential areas of Bose Para, New town area. Kadamtala became an important commercial centre. Dipti Talkies, Alochaya (Rupmaya) Cinema Hall, Bandhb Natya Samaj auditorium added a new dimension along with shops and bus stand.

4.2.3 Jalpaiguri Town After 1960's And Onward

By 1960's, the built up area of the town had expanded around the C.B.D (Dinbazar) mainly at the right bank of river Karala. There after the major developmental took place in this part and ultimately this new part become the main town ship. The rubber plantation was totally abolished from the town. With the rapid growth the land use pattern changed dramatically the water bodies were converted to the residential lands unscientifically in the town. The mango groves at the north of Rajbari was restricted in a particular area and most of the trees were cut down for residential purpose.

Slowly the town expanded. At the south and west. The area increased from 10.07km² in 1961 to 12.975 km² in 2001. After 1995 the built up area of the town which situated at the northwestern part (Arabindra Nagar etc.) South-western part (Danga Para , Pandapara) included in the municipal area. The number of wards increased from 6 to 19 and further increased to 25 in 2001. The town ultimately expanded both in size and population. But lack of formal planning in the early development of Jalpaiguri town and haphazard growth of its low lying mid-western part account for the unhealthy growth of the townscape.

4.3 LAND USES AND THEIR CHANGES

The urban 'landuse' is a term, which denotes urban space, land area, water bodies in the cities and three dimensional spaces above the land of the city. The urban area is the centre of art,

culture, leisure and power. So, in essence the term 'urban land use' broadly refers to spatial distribution of city functions, its residential communities of living areas, its individual commercial and retail business districts or major work areas, and its institutional and leisure time functions (Chapin 1957). The existing patterns of a land utilization in any region are the result of a continuous inter-play of physical elements like topography, climate, soil and human efforts guided by a host of socio-economic condition (Sharma And Cutinho 1983). According to Bourne (1982), urban spatial structure is a set of organizing principles that define the relationship between the urban form and interaction. This results in different uses of land surface according to man's need.

The urban land use study is a new branch of geography and its importance has been aroused since the Second World War when its need for planning and replanning of urban places was universally felt (Dubey, 1969). There are several general definitions of land use, the earliest of which was given in connection with the first land utilization survey of Britain from 1931 onwards. Land use survey depends up on the scale and the purpose of study. The study of land utilization is become very important in present days, as it helps to identify the non used or mis used lands and also helps to develop comprehensive land policy related to re use of the lands. The study of temporal changes of lands is necessary for future use.

4.3.1 Classification Of Land Use

Classification is vital and most significant to the study of urban land use, because it provides an easy key to understand the complex character of the city structure. The use of land is influenced by the interplay of many factors, constantly changing their relationship with one another, which give birth of different uses of land in different places. So, it is impossible to deal with these large number of land uses in the urban area with out grouping of similar use. One of the earliest classifications made by Bartholomew (1955) is not entirely applicable in the present day, both in western countries and in India. The classification made by American Institute of Planners based mainly on the functional characteristics and other is more applicable in the present day. The geographical distribution of land use in urban areas is of prime interest to the geographers, urban sociologists and city planners, urban sociologists and city planners. In India, town planners quite often characterized urban land use into residential, commercial, industrial,

transport, communication, public utility, public and semi public uses, open space, agricultural, vacant lands and water bodies. On the other hand urban geographers classified urban land use into residential, agricultural, open space, military land, park, play ground, commercial, administrative, educational, industrial and burial ground (Singh. S 1964, Sinha 1970) etc. In the present study different land use of Jalpaiguri town are categorized based on different planning organizations and urban geographers, and are shown in Table 4.1 on the basis of the area of each land use category, the maps are drawn for the town (Fig.4.4)

(i) Residential

The residential land use in the town is the largest proportion of urban land and plays a significant role in shaping the urban morphology. There is a inverse relationship between the size of a town and the space occupied by residences, That is today, smaller the town larger the area under this use (Attaullah, 1985). Residential use is controlled by the nature of land, growth and distribution of non-residential lands, time distance from the place of worth, urban amenities etc. The demands for housing in urban areas depend on income, taste and affinity in their economic and socio-cultural frame.

(ii) Commercial

Trade and commerce play an important role in the development of urban life and activity. Once the commercial centre is established, it starts affecting the residential growth, because most of the people like to reside near to the main commercial centre of the town. And the central business district becomes the centre of all economic activities.

(iii) Public And Semi Public

The public land in the urban area is largely utilized for administrative purpose, education, medical institution etc. Though it covers small percentage of land area, but there are important or essential in the social life.

(iv) Industrial use

The light industrial units or college industries are sometime developed around C.B.D or scatteredly develop in the town, which cover small percentage of land than other use.

(v) Transport

Transport is an important influence in land use economics and the amount of lands under this category varies from one place to another.

(vi) *Road*

In India the streets are as much as narrow as possible. Varying standard of street widths, prevailing policies of land use control and the density of development are all factors in the use of land for streets or roads

(vii) *Parks / Open Space And Water Bodies*

Looked at from the urban point of view the function of the open space in the town is positive as it is actively used for public purpose. Open space is inversely related to the size of a town. The larger is the town, the smaller is open space. Open space provides not only the space for recreation purpose, but also preserve open space character of selected piece of land with in the built up area. Water bodies includes river, pond tanks etc.

(viii) *Vacant Land*

Those lands are vacant at present, but have possibilities of use in the future are normally categorized as vacant land. It may remain as follow lands or vacant plots in residential, or commercial areas of the urban centre for future use.

Table 4.1 TYPES OF LAND USE AND THEIR PERCENTAGE IN JALPAIGURI TOWN
IN 1992 AND IN 2007

Category Of Land use	1992		2007		Growth Rate (in %)
	Area in km ²	Area in %	Area in Km ²	Area in %	
Residential	5.65	56.0	7.824	60.3	+7.68
Commercial	0.40	4.0	0.856	6.6	+65
Public & Semi Public	0.45	4.5	0.649	5.0	+11.11
Industrial	0.01	0.1	0.065	0.5	+400
Resi- Cum Commercial	0.01	0.1	0.324	205	+2400
Transport	0.01	0.1	0.129	1.0	+900
Road	0.60	6.0	0.908	7.0	+16.66
Agriculture	1.31	13.0	0.350	2.7	-79.23
Water Bodies	0.5	5.0	0.584	4.5	-10
Open Space	0.3	3.0	0.313	2.4	-20
Vacant Land	0.82	8.0	0.545	4.2	-47.5
Miscellaneous	0.02	0.2	0.428	3.3	+1550
Total	10.08	100.0	12.975	100.0	+28.72

LANDUSE JALPAIGURI TOWN 1992

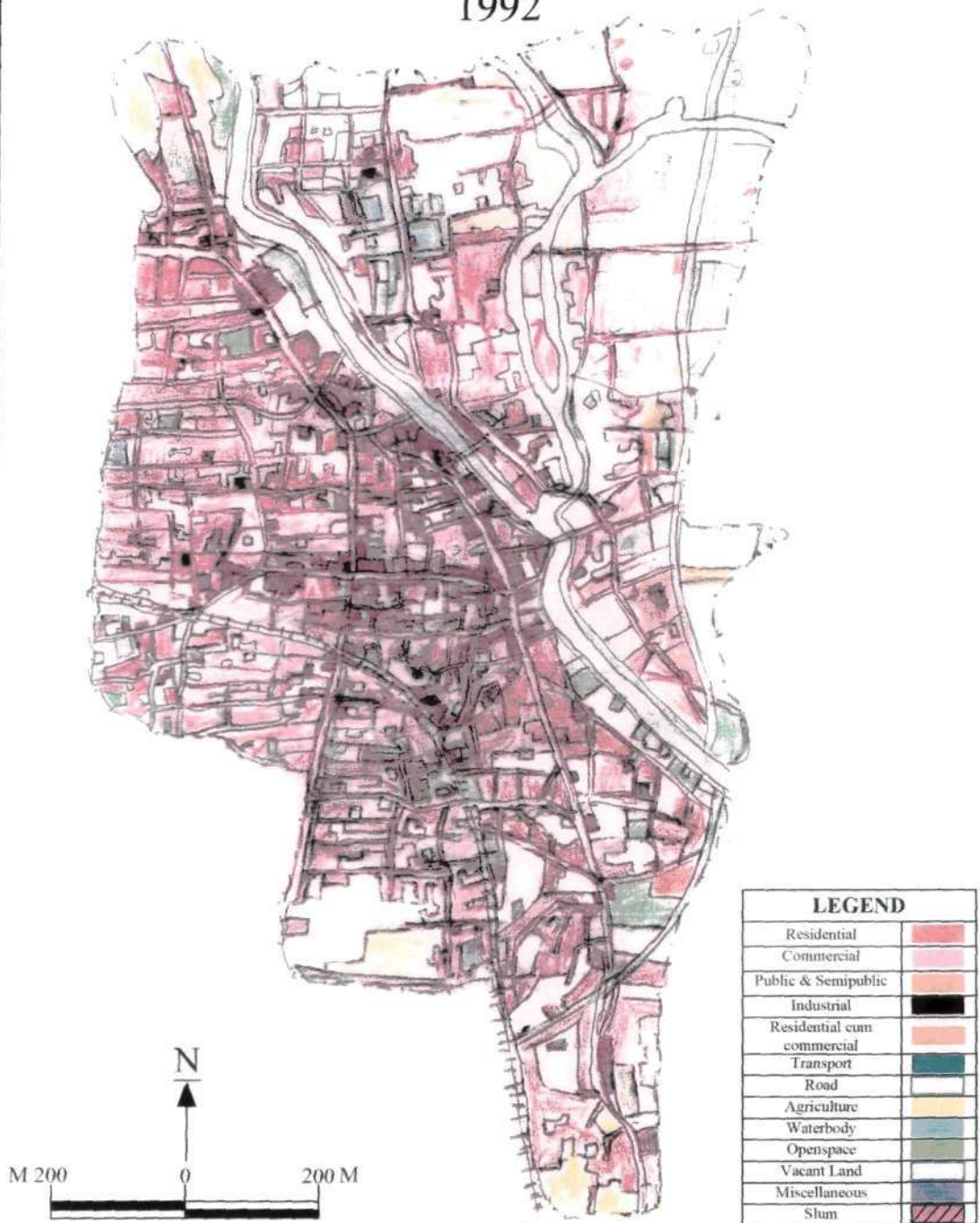


Fig - 4.3

4.3.2 Land Use Scenario In Jalpaiguri Town In 1992

4.3.2.i Residential

In 1992 the town has devoted 56% (5.65km²) land under residential use, which is distributed mainly between the River Karala and railway track. The main residential zones were located -

- (a) Around the C.B.D (Dinbazar) of the town, which covered 70% lands under residential use.
- (b) Between the railway track up to the southern part of municipality.
- (c) North-eastern part of the town, which was backward in respect to the other parts of the town.

4.3.2.ii Public & Semi Public Use

In 1992 about 4.5% (0.45 km²) lands, where occupied by public and semi public use, which was concentrate –

- (a) Between River Karala and Railway Station, which include municipal office, Telecom department, Head Post office etc.
- (b) At the east of River Karala with major government offices.
- (c) At the central part which included hospital, Jail etc.

4.3.2.iii Commercial Use

The commercial use (4%) was extended covering 0.40 km² area in a linear form in the central part of the town and along the main through fares like D.B.C. road, Merchant Road, and Kadamtala. Some isolated pockets of commercial use and daily markets are found in the town.

4.3.2.iv Residential-Cum-Commercial

Land under this category (0.1% to the total) was occupied by 0.01 km² and mainly found near the major through fares of the town.

4.3.2.v Industrial Land Use

The percentage of land under industrial use was 8.1%, which covered 0.01 km² areas of the town, and found near fringe area.

4.3.2.vi Transport and Communication

The percentage of land under this use is also small (0.1%) and found at the northwestern fringe and at Kadamtala of the town.

4.3.2.vii Roads

The percentage of land, which is used as road, was only 6% (0.60 km²) of the total area of the town. The lands and by lanes were more in number at the western part of the town comparing the other parts.

4.3.2.viii Water Bodies

Except River Karala several points and water logged low lands were found scatterdly, which occupied 5% (0.5 km²) of the total area of Jalpaiguri town Dulal Deeghi, Kantashwary Deeghi, Rajbari Deeghi were the major water bodies of the town.

4.3.2.ix Agricultural Land Use

The agricultural zones (13.0% of the total of the town) were found at the periphery of the town. The maximum concentrations of agricultural lands (75% of the total) were found at the north eastern past and other were found in pockets at the southern part of the town.

4.3.2.x Open Space

The open space covered 0.3 km² (3% of the total area), which included several play grounds, parks and Town club ground, scatterdly distributed all through the town.

4.3.2.xi Vacant Land

Vacant lands were unevenly distributed away from the C.B.D, especially in the east of river Karala and was recorded 8% (0.82 km²) land of the town.

4.3.2.xii Miscellaneous Land Use

The land under this category occupied 0.2% (0.02 km²) of the land, which was evenly distributed among the C.B.D area.

4.3.3 Land Use Pattern In Jalpaiguri Town in 2007

In this chapter the study aims to represent the land use pattern of Jalpaiguri town and to find out the space and direction of land transformation in the town. The land use of various sort are so mixed type, which is related with the type of activities in different parts of the town. The structural form of the town helps the residents to find every necessary thing within their walking distances. Urban landscape is therefore undergoing alteration at all times as it grows in size.

Land use survey was made for several times due to non-availability of land use maps and published materials. The distribution of different land use functions in the wards of the town is shown in Figures starting from no 4.1 to 4.25. It reveals that the residential use is spread through out the length and breath of the town, while commercial, administrative and industrial uses are localized. It is also evident that in the bigger wards, the percentage of land under residential and commercial uses was less in comparison to the smaller wards lying near the central part of the town and newly added wards at the fringe.

DISTRIBUTION OF FUNCTIONAL ZONES

A closer link between the two approaches is provided by the realization that certain functional types of towns produce specific morphologies (Smailes, 1955). The function of a town may be studied by dividing it into certain functional zones. But unplanned town like Jalpaiguri have no clear-cut zones. On the basis of field survey and other sources of information's the distribution of land use of each ward as well as the whole town has been illustrated in this chapter.

4.3.3.i. Residential Land Use

In residential areas of the townhouses are not constructed in a planned way. They are constructed in a haphazard fashion along roadside with out functional, income or class homogeneity. Table 4.2 shows the land under residential use in different wards in Jalpaiguri Town.

Table 4.2 WARD WISE DISTRIBUTION OF RESIDENTIAL LAND USE IN THE TOWN

Percentage of Residential Land	Category	Wards	Percentage Of Wards	No. Of wards
<40	Very Low	1, 2, 5, 8	16	4
40-50	Low	4, 6, 9, 21., 25	20	5
50-60	Moderate	3, 17, 22,24	16	4
60-70	High	7, 10, 11, 12, 13, 14, 15, 18, 20	36	9
>70	Very High	16, 19, 23	12	3
			100	25

It is found that very low percentage of residential lands (<40% are found in the northeastern part, and in C.B.D area those are shared by 16% of the total words. The percentage is low (40-

50%) in the wards located in C.B.D area, and northwestern (ward no. 21), southeastern (ward no. 9) corner of the town, which is shared by 20% of the total words. The percentage is high (60-70%) in the wards located in central and southern part of the towns, which is shared by (36%) of the wards in the town. The land under this use is very high (>70%) in only there wards found in the central part, which include Mahamaya Para, Ukil Para and Arabindra Nagar etc. and is shared by 12% of the total words. The highest percentage (78%) of residential land is recorded in ward no 23 and lowest (15%) is found in ward no 5. land under residential use played a dominant role in all the wards except in ward no 5 and 8, where commercial or public lands are predominant.

Residential Zones

The town has 60.3% lands devoted in residential use, which is distributed in all the wards unevenly and covers 7.824 km² areas of the municipality. It is found from Fig- 4.4, that the lands under residential use are dissected by River Karala in the east and by North-eastern Railway line at the south. The residential areas of the town can be grouped into.

Zone I [North-Eastern Part]

Morphologically the town may be divided into two distinct parts, which have been separated by River Karala, flowing through the heart of the town. This enclosure delimiting the North-eastern part of the town, situated at the left bank of river Karala. Zone I is spread in this part of the town, which is the older part of the town and is characterized as less developed residential zone. Out of three wards are (Ward no 3), have 50-60% land under residential use, where as the other two (Ward no 1 & 2) represent <than 40% land under this use. As a whole 39.94% of the total area of Zone I is occupied by residential use. Agricultural land was predominant here till 1992, but at present vacant land, open space together occupied 22.88% lands and agricultural land covers only 9.22% of the total area of this Zone. In this zone, residential landuse is low in percentage due to backwardness and remoteness. A few slums have filled in the gaps lying between the residential areas and vacant land.

Zone II [South-Eastern Part]

Zone II is located in the west of river Karala, and extended up to the railway track at the west and in the south up to the municipal boundary. This zone consists of three wards (ward no 8, 9, 10) and characterized by public sectors, where residential lands are segregated in pockets and

covers only 44.78% lands in this Zone. This zone is located far away from the city centre, but government housing (ward no 10), police housing (ward no 9) and some government quarters, college hostels (ward no 8) help to increase the percentage of residential purpose. Some slums such as Gorumara basti, Subhash Unnayan Palli etc. are developed in between public and residential sectors.

Zone III [Southern Part]

This zone is developed at the southern part of the railway track and extended up to the southern limit of the municipality. This zone is purely residential and out of (wards 5 have high percentage (60-70%) of lands under residential use. In only one ward (ward no 6), use of land under residential purpose is maximum that is >70%. This zone is characterized by rectangular street pattern and radius size plots (2-5 kathas). One major slum area (Harizon Basti) is located between the Panda Para Road and Railway track at the northern part, and another is found near Dulal Deeghi at the southern part of this zone. Other slums are scatteredly developed in Bowbazar. Pan Para, Mahamaya Para near 4 no. Ghoomti etc. by occupying, public land or vacant lands.

Zone IV [Central Part]

Zone IV is located at the west of River Karala and extended upto the railway track, station Feeder Road at the south and upto the western limit of ward no 19, and 24. As this zone is lying around the C.B.D (Dinbazar) and central commercial zone (Kadamtala) more people are attracted to reside here. Among 8 wards three (ward no 4, 5, 6) have low share of land under residential purpose, as main business centre and commercial zone are situated here. But other wards have large to very large share of residential lands under this zone. As area is low but population pressure is high. This zone lying as the most congested zone of the town.

Zone V [Northwestern]

This zone is located at the south of River Karala and delimited by railway track at the southwestern part and municipal boundary at the west. About 51.2% land of this zone is occupied by residential use. Out of five wards, two (ward no 20 & 23) have large (60-70%) to very large (>70%) share of land under this use. Residential use of land is increasing in this zone,

because land price is comparatively low, between congested and well connected – With the other part of the town.

4.3.3.ii. *Public And Semi Public Zones*

As Jalpaiguri town acts as a District Head Quarters of Jalpaiguri district, it has a important percentage (5%) of public and semi public land use, which has its main concentration in the mid- eastern part of the town.

Table 4.3 WARD WISE DISTRIBUTION OF PUBLIC AND SEMI PUBLIC LAND USE

%Of Public & Semi Public Land	Category	No of wards	% Of Wards
<5	Low	12	50
5-10	Moderate	6	25
10-15	High	4	16.6
>15	Very High	2	8.4
		24	100.00

Table 4.3 shows that majority of the wards (50%) have a low percentage (<5%) of land under public or semi public use. Three wards are mainly residential in character and located mostly at the fringe area. The percentage in wards (6.6%) is high (10-15%) Those are located at the mid-eastern part and northwestern corner of the town. Only two wards (ward no 1 and 8) have maximum area (>15%) under this use, and majority of administrative offices, educational institutions, hospital and Jail are located here. Public and Semi Public land use can be grouped into three Zones.

Zone I/ Administrative sector

During British period administrative sector are located in a area that had both geographical and political advantages, Jalpaiguri is not an exception. Zone I is the most important sector, and lying at the eastern part and extended up to the embankment of river Tista and covers 0.157 km² area. All most all important administrative, public and semi public centers such as D.M. Office, Revenew, Motor Vehicles Department etc. and a number of bungalows of administrative officers, Circuit House, etc. showed true urban character of the town. This zone is well connected with other parts of the town.

Zone II / Administrative And Public Sector

This Zone is located at the north of the town and delimited by River Karala at the west and river Dhardhara at the east. This is this largest public Zone covering 0.315 km² area. Important administrative feature of this zone is the locations of Jalpaiguri Jail and public sectors like Jalpaiguri Sadar Hospital.

Zone III / Institutional And Public Sector

This zone is lying at the west of River Karala and extended upto the embankment near Shubhash Unnayan Pally at the south. This is the 2nd largest public zone, where 0.277 km² area (Ward no 8, 9, 10) is used for both public and institutional purpose, which included Zilla Parisad, Municipal Office, Head Post Office, Telecom Service, District Library, Fire Brigade, Police Line and Schools, Colleges and some cultural centers.

Zone IV

This zone is located in and around C.B.D, which covers the smallest area (0.0593 km²) among the other public Zones of the town. Administrative units like district court, police Station Dak Banglow, several public and private offices, educational institution college etc utilize this area. Besides a number of government offices located in the different part of the town, a number of private, public or semi-public sectors are distributed in other wards in a haphazard manner.

4.3.3.iii Commercial Zone

Urban geography is largely concerned with the city as a commercial system, as the place, where commodities are manufactured, brought and sold. Commercial land use occupies pivotal but not a very big area of land utilization in the town. It covers only 6.6% (0.856 km²) of the total area of the town. The commercial zone covers the central area of the municipality, but it also spread along the main arterials in a narrow ribbon form. The distribution pattern of commercial lands among the wards (Table 4.4) shows that, the percentage is very low (<15%) in the peripheral and main residential wards, which is shared by 48% of the total wards of the town. The percentage is moderate (5-15%) in 40% of the wards. Mainly retail shops, daily markets, isolated store clusters are found in these wards where commercial land is present in a low to moderate percentage. Commercial land is high (15-25%) in only one ward (ward no 6) and very high (>25%) in two wards (ward no 4 & 5), those all together forms the C.B.D of the town. The

highest (49%) and lowest (1%) percentage of commercial land is found in ward no 5 & 3 respectively.

Table- 4.4 WARD WISE DISTRIBUTION OF COMMERCIAL LAND USE

% Of Commercial Land	Category	No. Of Wards	Percentage of Wards
<5	Low	12	48
5 – 15	Moderate	10	40
15 – 25	High	1	4
>25	Very High	2	8
		25	100

C.B.D. In The Middle Sector

Dinbazar is the central commercial zone, which is specialized for varieties of items such as garments, furniture, electrical goods, hardware, stationary equipments, grocery, fish, meat etc. along with banking and other financial institutions. Dinbazar plays an important role in commercial exchange and interlinked the supply of food and resources to the town. This sector is characterized by old congested part of the town. The near by location of hospital have added a new color to this sector.

Other Commercial Pockets

The commercial land use is extended from the C.B.D towards south along the major thoroughfares like merchant Road, D.B.C Road up to Zilla Parisad Road and Kadamtala to Haldibari Road. Another commercial land use is found in a ribbon form, along the Silliguri-Jalpaiguri Road. In addition some important marketing centers like Station Market, Bawbazar, Municipal Market etc. have come up as the commercial pockets in the town.

4.3.3.iv. Residential Cum Commercial Land Use

Residential cum commercial land use added a special character to the town. Field survey reveals that residential cum commercial land use is absent in ward no 1, 2, 9 and 25, those are residential wards with negligible percentage of commercial activities. The highest percentage (12%) is found in ward no 6 and lowest (0.3%) is found in ward no 14.

Table- 4.5 WARD WISE DISTRIBUTION OF RESIDENTIAL CUM COMMERCIAL LAND USE

% Of Resident Cum Commercial Land	Category	No. Of Ward	% Of Wards
<1	Very Low	8	39
1 – 3	Low	3	14
3 – 5	Moderate	4	19
5 – 7	High	3	14
>7	Very High	3	14
		21	100

Resident cum commercial land use is found very low (<1%) in southern fringe and a pocket, which is far away from the commercial centre of the town. Land under Resi-cum-commercial use is high (5-7%) in three wards (14% of the total wards) through which the major business thoroughfare is plying, such as Kadamta M.G. Road, Panda Para Road etc. It is very natural that the percentage is very high (>7%) in C.B.D. area, which consist of ward no 4, 6 and 7. Due to the increase of land value near C.B.D. the residential houses are converted to residential-cum-commercial use. Some residential houses of rich Marwari business families carried out this character of the town.

4.3.3.v Industries

The percentage of area under industrial land use is 0.5%; which covers 0.065 km² area of the town. Several small-scale industries and cottage industries are scatteredly situated in the town. The industrial land use is not related to the size of the town and only 56% (14 out of 25) wards have lands under industrial use. Among these wards, ward no 20 has highest percentage (3%) of land under this use. Construction related units and foodstuff units are dominant here. Machinery, vehicles, repairing industries, publishing units is dominant near C.B.D and along the main business thoroughfare.

4.3.3.vi Transport and Communication

Transport has an important influence in land use economics, as well as economic activities as mobility of people; goods and information are related with transport and communication system. This function covers 1% (0.129 km²) of the total area. There is one distinguished zone of railway that is Jalpaiguri Town Station situated in ward no 8 and covers only 0.1% of the total

land of that ward. There are five taxi stands, one truck stand and four major bus stands scatterdly located in the town. Among these, ward no 7 and 25 have 2% land under this use. The N.B.S.T.C and Duars Bus Stand are located in Netaji Para, and Siliguri Jalpaiguri Bus Terminus is located near Municipal Market at Kadamtala Road. One private Taxi Stand is also located near the Siliguri Jalpaiguri Bus Terminus. Public telephone booths are unevenly distributed all over the town, which occupy a negligible percentage of each ward.

4.3.3.vii Roads

The amount of space devoted to streets varies according to the characteristics of individual town. The main road of the town is Siliguri-Jalpaiguri Road, Jalpaiguri – Maynaguri Road, Jalpaiguri – Haldibari road etc. those are connected by lanes at right angle. Most of the lanes and by lanes in the west of Jalpaiguri – Siliguri Road have east- west extension. The percentage of land under roads occupy only 7% (0.908 km²) of the total area, of the town. It is found that 40% of wards have less percentage (<6%) of lands under this use. Wards under this category are mostly situated in fringe area having large area and less developed than the wards of central part. So, new roads are not developed here. About 36% wards have lands more than town average (>7%) under this category. These wards are mainly densely populated wards, where new roads are developed with the expansion of residential use of land.

Table- 4.6 WARD WISE DISTRIBUTION OF LAND UNDER ROADS AND STREETS

% Of land	Category	No. Of wards	% Of wards
<6	Low	10	40
6 - 7	Moderate	6	24
>7	High	9	36
		25	100

4.3.3.viii Water Bodies

Water bodies are the important aspect of urban ecology. In Jalpaiguri town the river Karala, Dhardhara along with a number of ponds such as Rajbari Deeghi, Kanteswari Deeghi, Masjid Deeghi. Dulal Deghi etc. occupy 4.5% area (0.584 km²) of the total. Among the wards, ward no 25 is boarderd with river Karala and represent the highest percentage (16%) of water bodies , as river Dhardhara and Rajbari Deeghi are also located here. Ward no 20 (12%) and 24 (10%) have considerable percentage of water bodies.

4.3.3.ix Agricultural Land

Agricultural Zones are found in the north-eastern periphery of the town and covers 2.7% (0.350km²) lands of the total. The north-eastern zone consists of two wards, of which ward no 2 records the maximum area (20% of the ward), and rest one (ward no 3) covers on 1.5% land of that ward. Other peripheral wards, such as ward no 20, 21 and 25 have 1% to 2% land under this purpose.

4.3.3.x Open space

Open space is the most important factor of urban ecology. In Jalpaiguri town open spaces are scatteredly distributed and occupy only 2.4% (0.313 km²) of the total area. The largest amount (17% of the total area) of open space is found in ward no 1 and 22.

Table- 4.7 **WARD WISE DISTRIBUTION OF OPEN SPACE**

% Of open space in wards	Category	No of wards	% Of wards
<3	Very Low	4	16
3 - 7	Low	9	36
7 - 11	Moderate	8	32
11 - 15	High	1	4
>15	Very High	3	12
		25	100

Table 4.7 shows that open space is low to very low (up to 7%) in C.B.D. and in congested residential wards of the town. A moderate percentage (7-11%) is found in 32% of the words, where play ground, parks are located. Among these wards, ward no 3 (near P.W.D more) has a considerable percentage of open space as Jubilee Park, Tista Uddyan along the River Karala and Town Club ground and play ground of Zilla School are located in this ward. Ranching ground near Paresch Mitra Colony (Ward no 25) and open spaces along the river- side also contribute to the amount of open space in the town. The percentage is found high (11-15%) in only one ward (ward no 9) where Police Parade Ground, play ground and spur of River Tista exist as open spaces. In Jalpaiguri 12% of the total wards have open spaces in a very high percentage (>15%), those include Sports Complex (ward no 1), Children's Park, JYMA and Other play grounds (Ward -8), open field between Polytechnic college and burning ghat (Ward no -22).

4.3.3.xi Vacant Land

Vacant land is distributed scatteredly all over the town away from the C.B.D and especially in the east of River Karala. At present 4.2% (0.545km²) land of the municipality is occupied by vacant land. The highest percentage (17%) vacant land is found in two wards located in north-eastern corner (ward no 2), and southern part (ward no 11) and lowest is found in ward no 12.

Table- 4.8 WARD WISE DISTRIBUTION OF VACANT LAND

% Of Vacant Land	Category	No. Of Wards	% Of Wards
<2	Very Low	7	29
2 - 6	Low	8	34
6 - 10	Moderate	2	8
>10	High	7	29
		24	100

It is found that, the percentage of vacant land is very low (<2%) in 29% wards of the town, those are situated in the central business area and central part of the town. The percentage is low (2-6%) in residential wards, those are situated at riverside area, near Rajbari (northern part), Mashkalaibari, Bose Para (North – western part), Danga Para, Pan Para, etc. (southern part) of the town and is shared by 34% of the wards. The percentage of vacant land is high (>10%) in 29% of the wards, those are located at the fringe area. These lands may be regarded as the provision for future changes.

4.3.3.xii Miscellaneous Use Of Lands

Miscellaneous land use is multi-dimensional in nature. Land under this use occupies 3.3% (0.428 km²) which includes auditoriums, cinema halls, clubs, social forests and other recreational places and crematorium, graveyard, church, orphanage etc. The highest percentage (12%) is found in ward no 22, where crematorium, graveyard, several temples are located and lowest percentage (0.3%) is found in ward no 12, where small temples are included under this category. This type of land use is dominant due to the existence of Ram Krishna Mission in ward no 10, Rabindra Bhavan in ward no 5, Jogomaya & Madan Mohan Temple, Netaji Bhavan in ward no 7, Rupmaya & Dipti Talkies, Bhandhab Natya Samaj Bhavan in ward no 17 etc.

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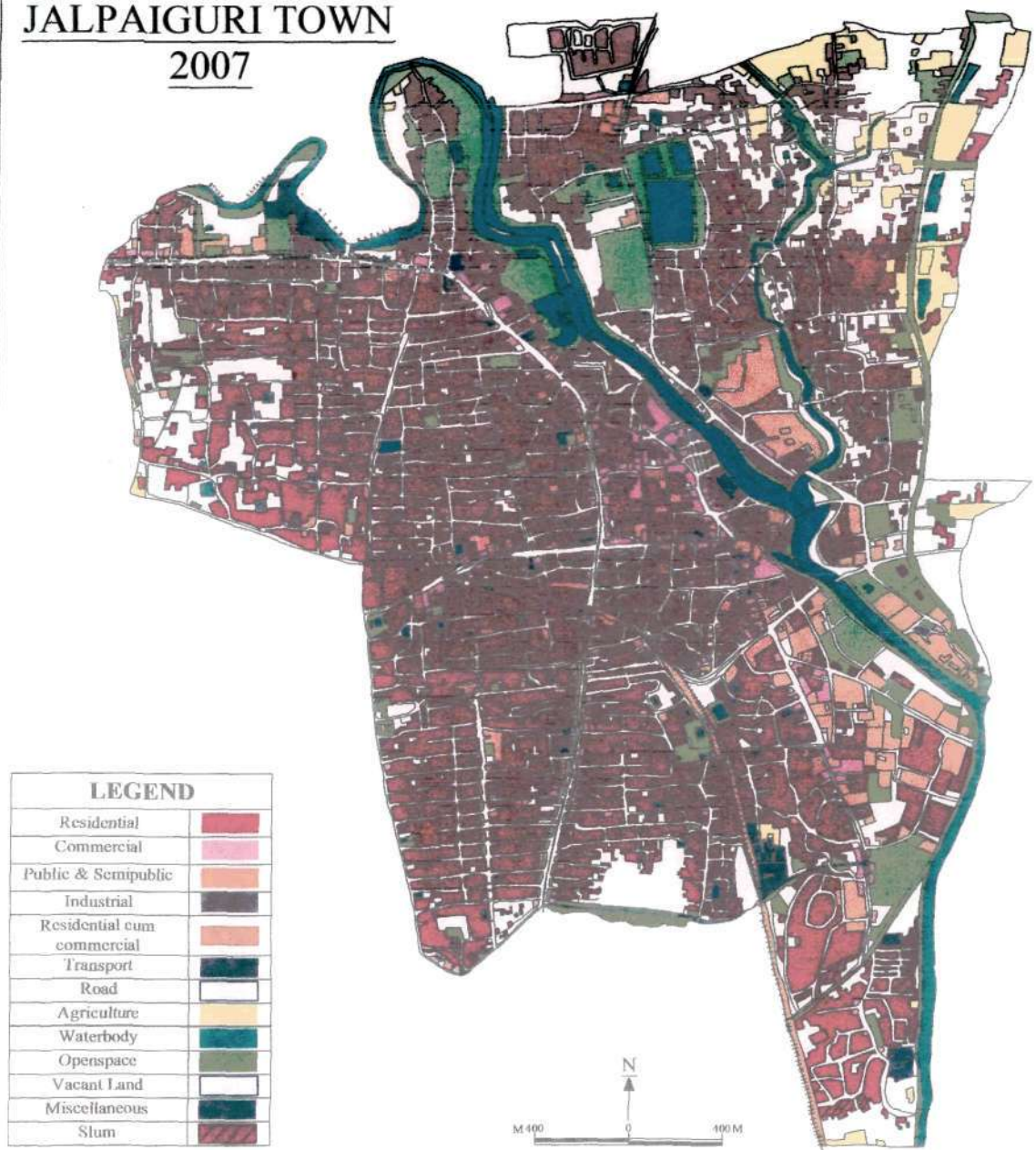


Fig - 4.4

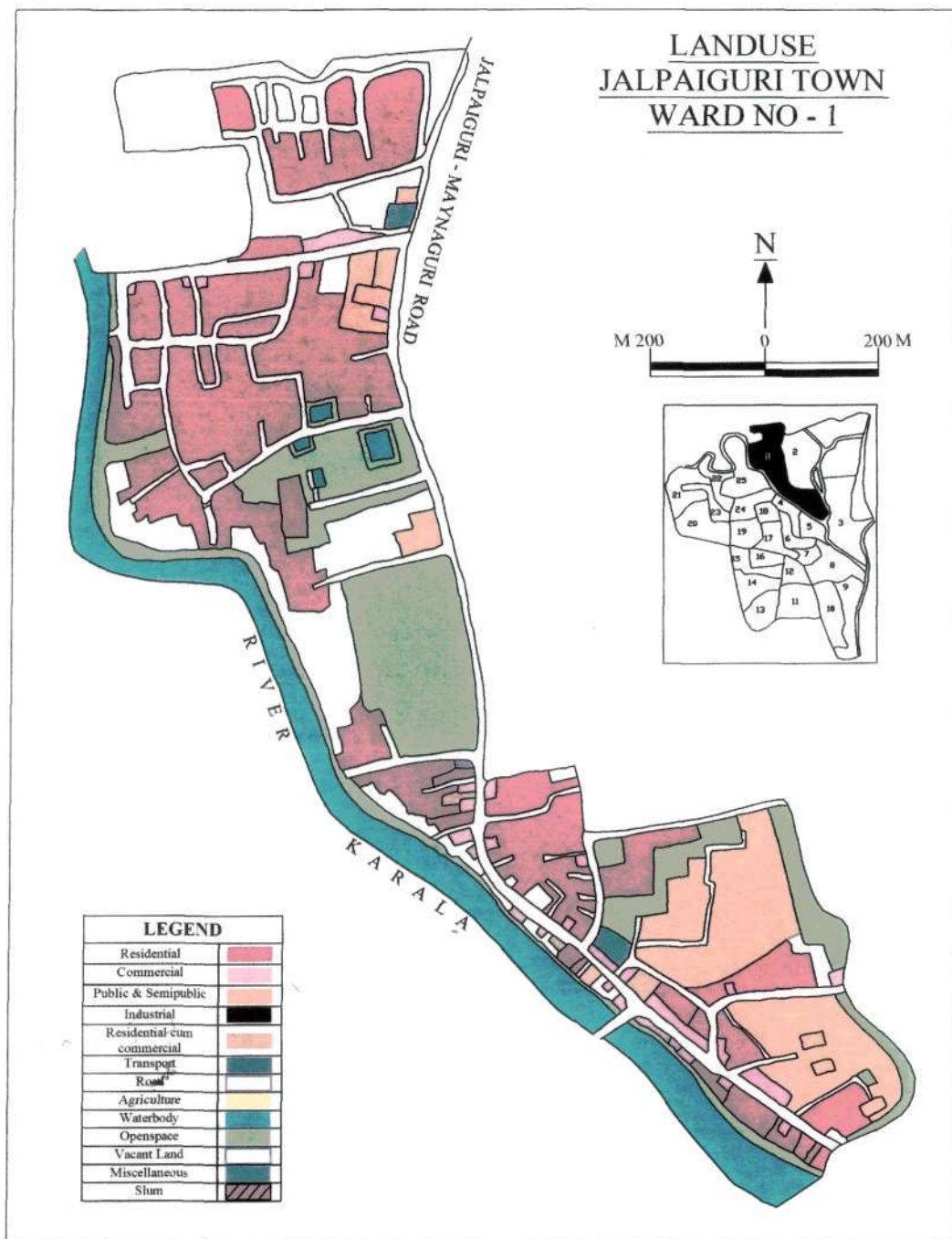


Fig- 4 5

LANDUSE
JALPAIGURI TOWN
WARD NO - 2

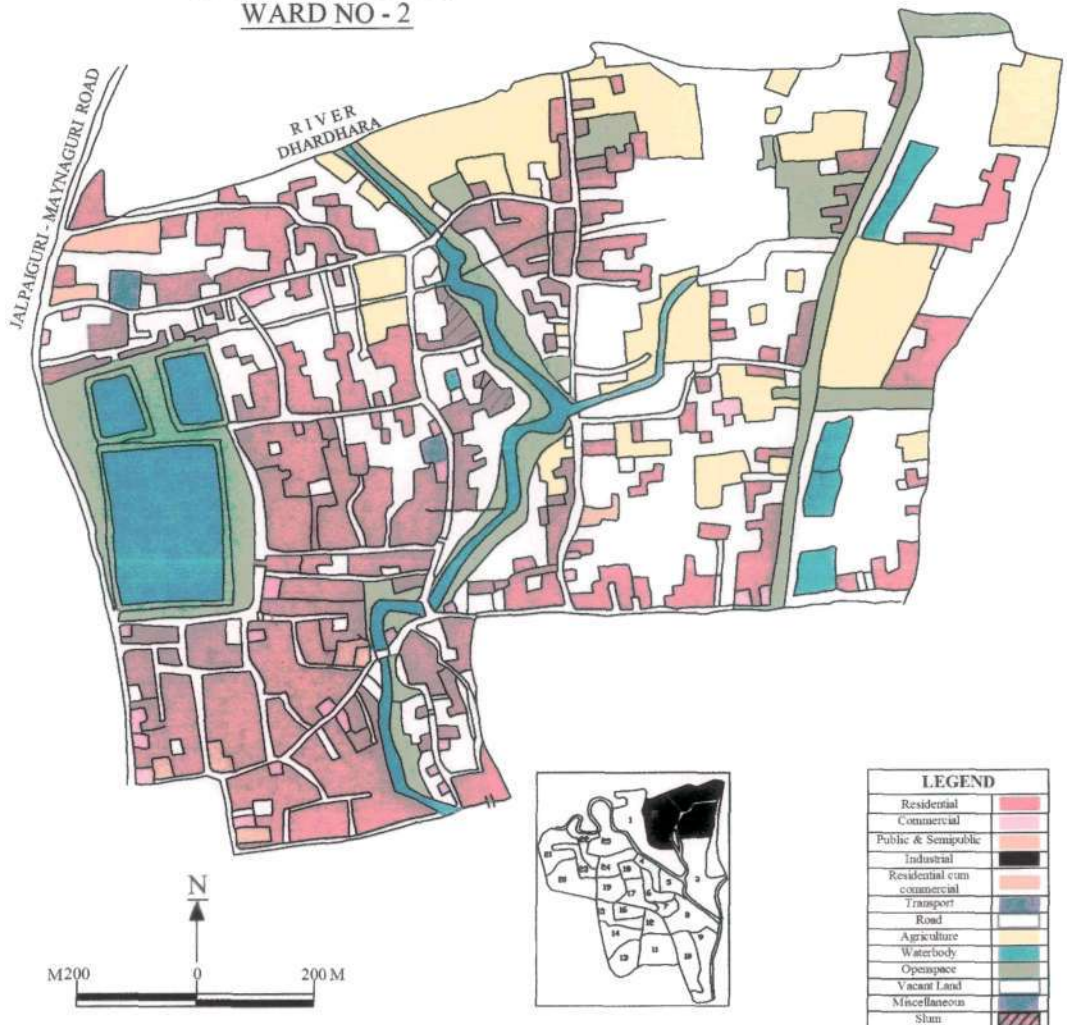
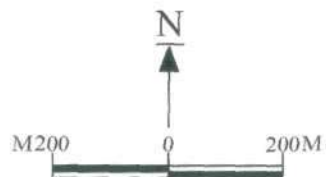


Fig- 4.6

LANDUSE
JALPAIGURI TOWN
WARD NO - 3



LEGEND	
Residential	[Pink]
Commercial	[Light Pink]
Public & Semipublic	[Light Orange]
Industrial	[Black]
Residential cum commercial	[Light Red]
Transport	[Dark Blue]
Road	[White]
Agriculture	[Yellow]
Waterbody	[Teal]
Openspace	[Green]
Vacant Land	[White]
Miscellaneous	[Dark Green]
Slum	[Hatched]

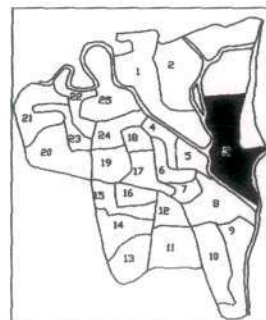
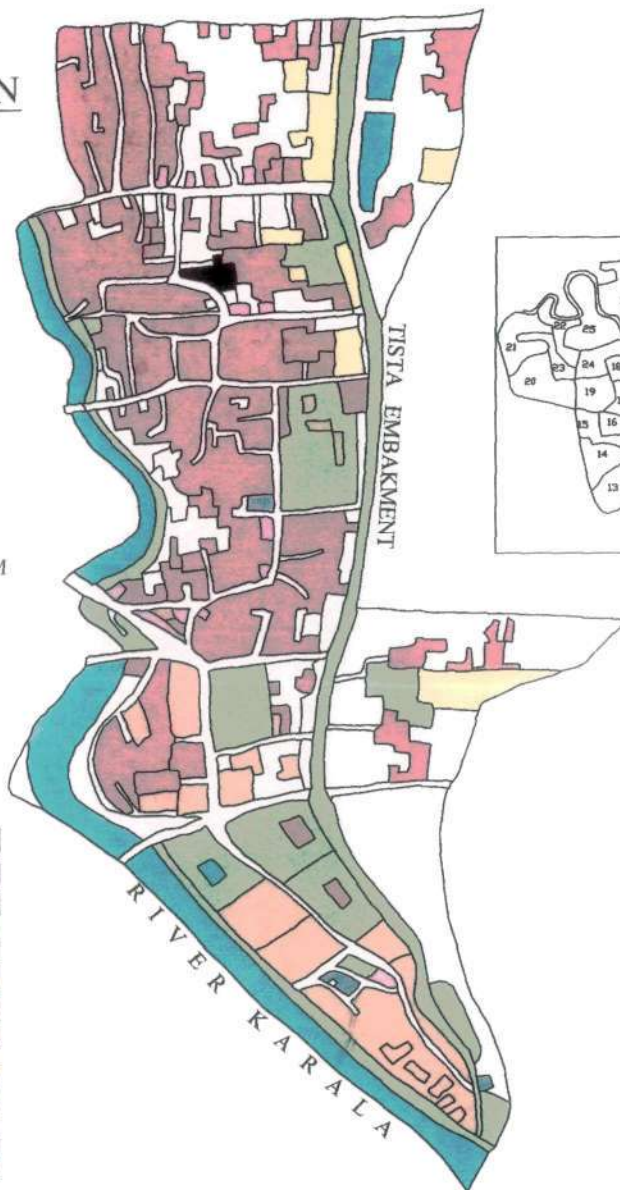
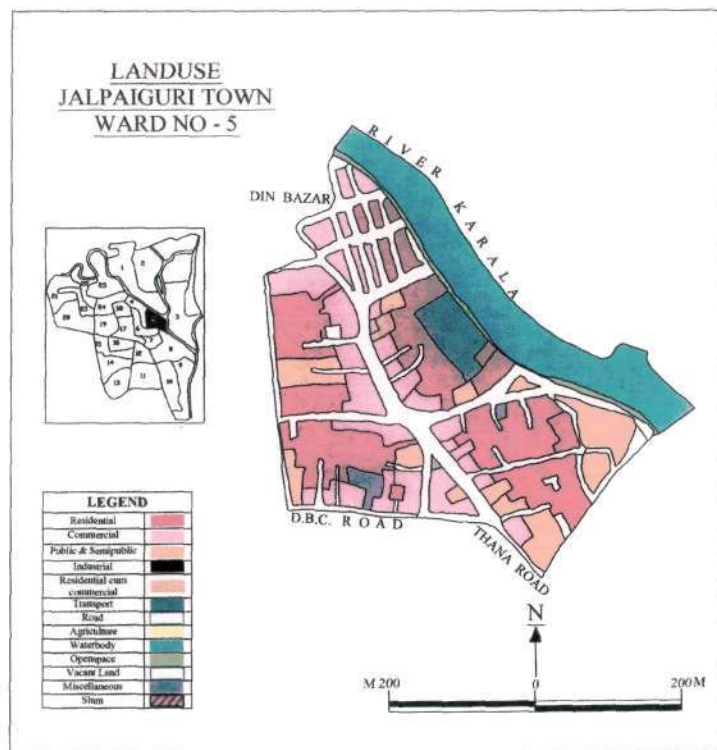
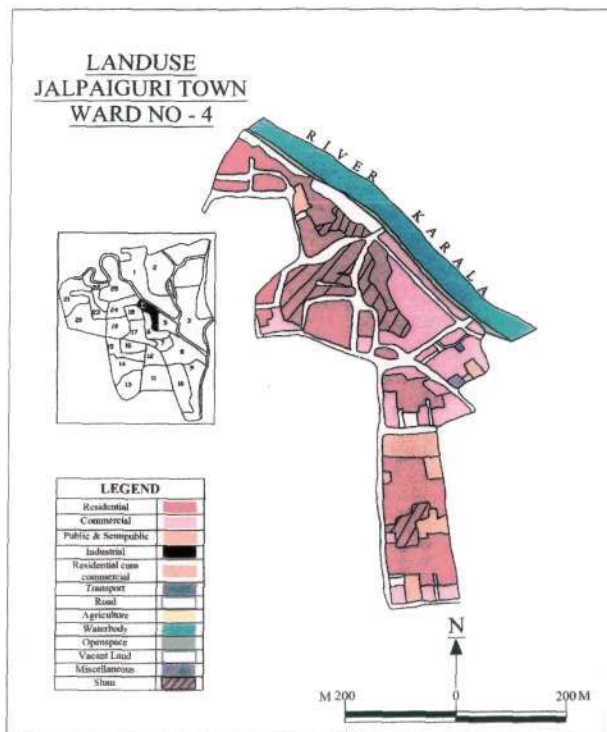


Fig- 4.7



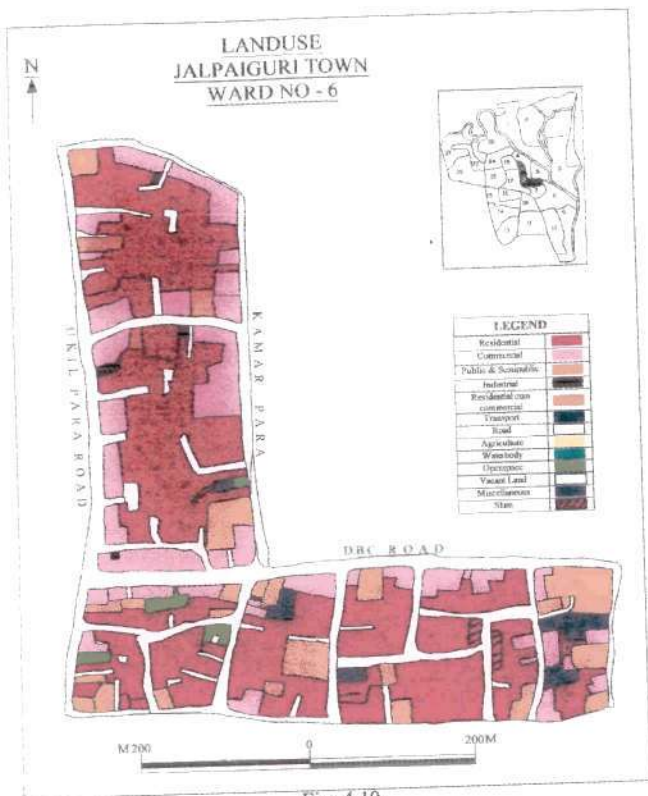


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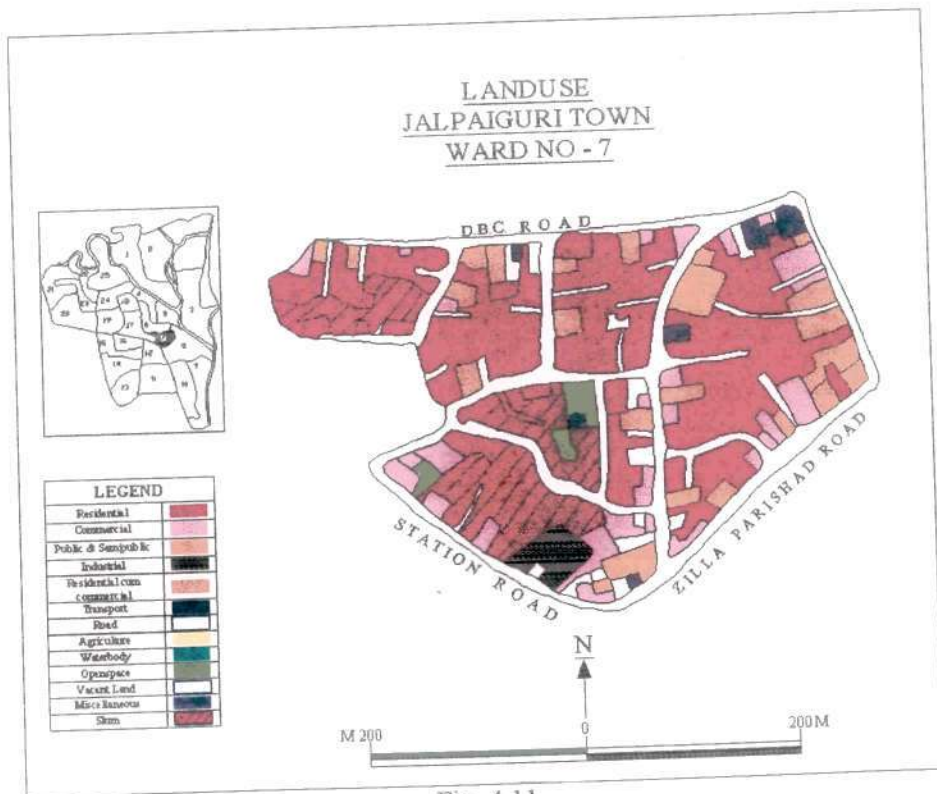


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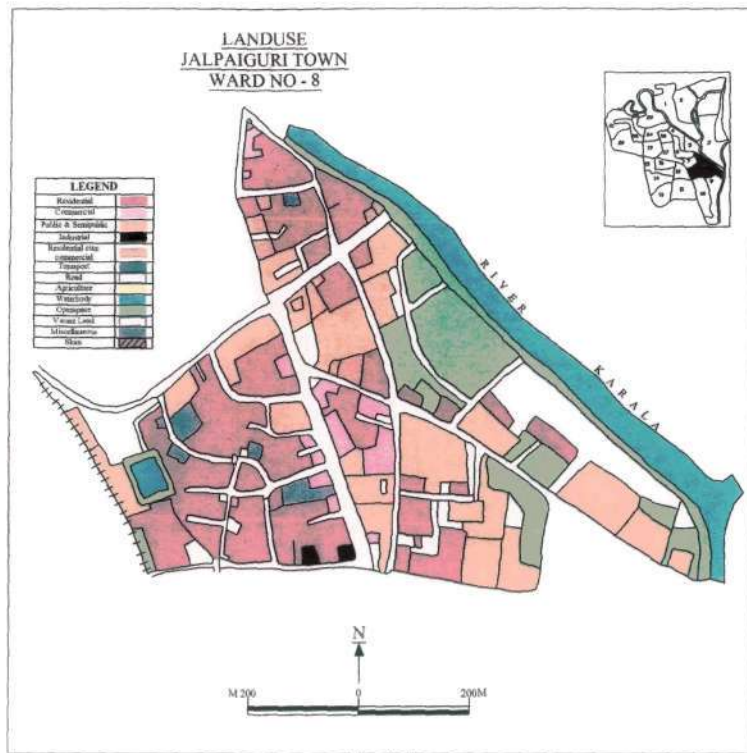


Fig- 4 12

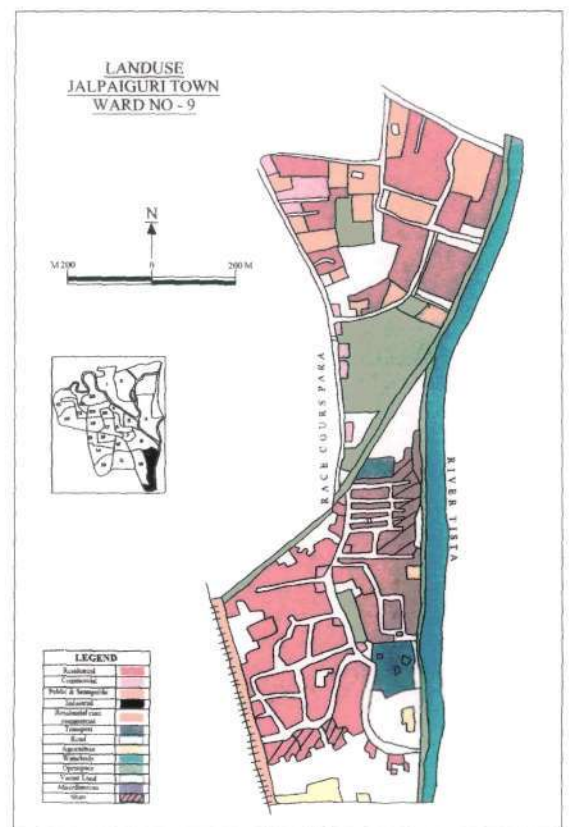


Fig- 4 13

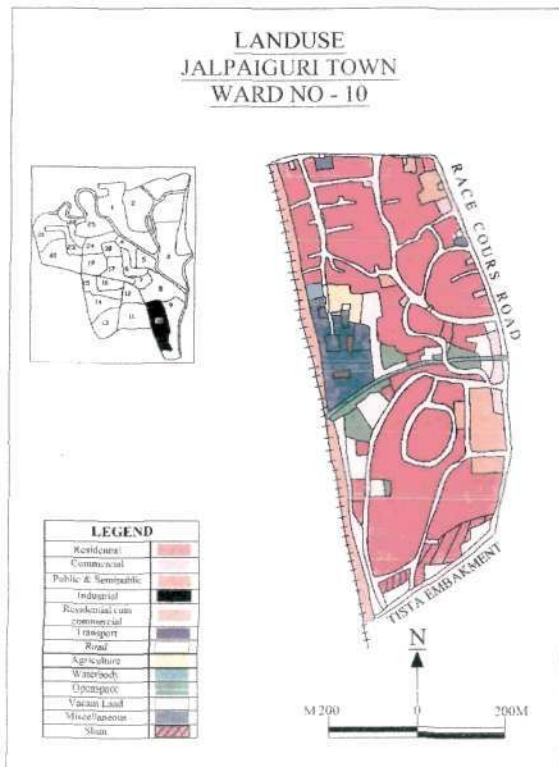


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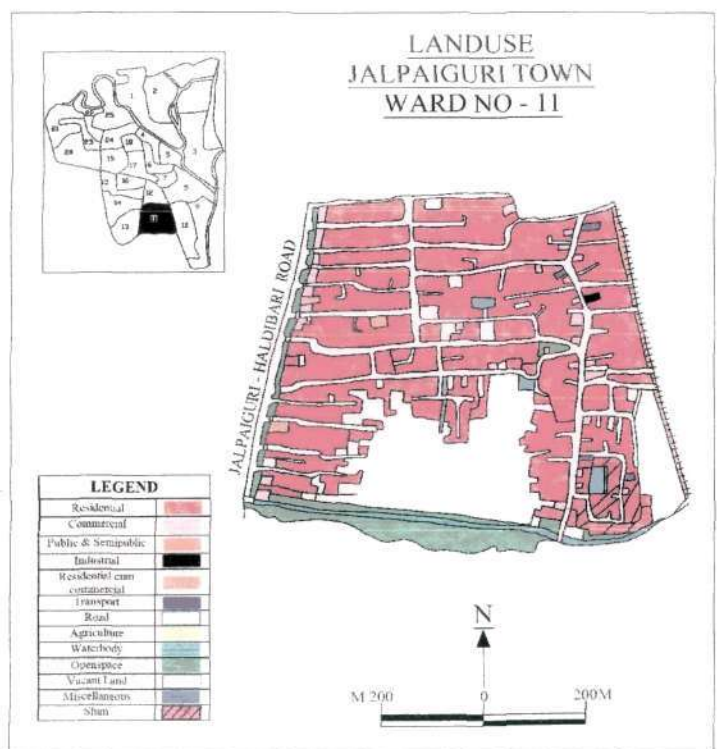


Fig- 4.15

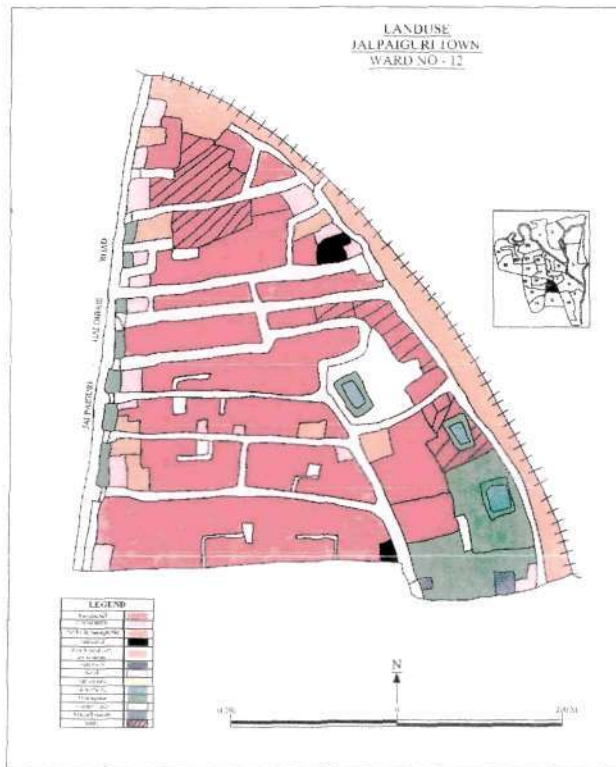


Fig- 4.16

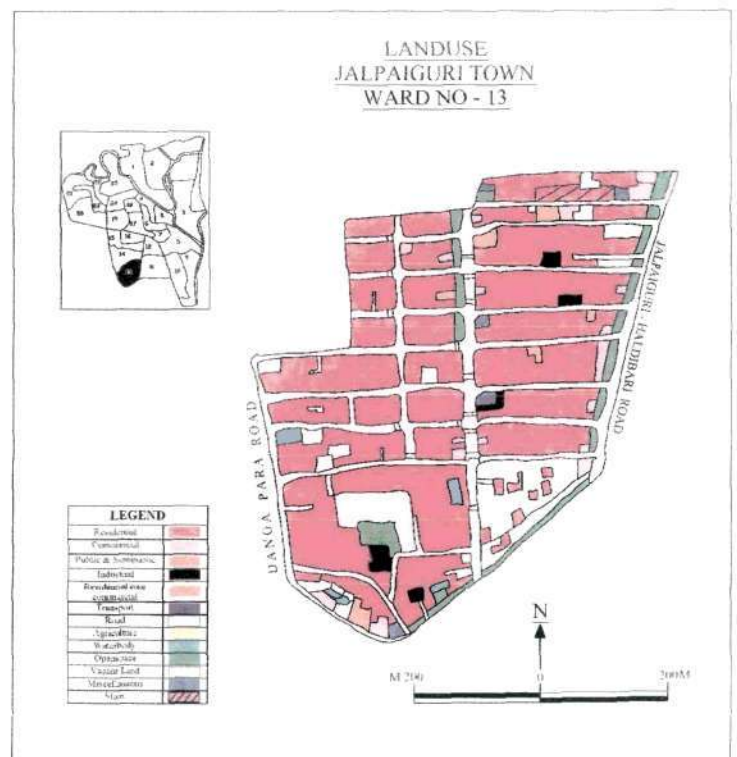


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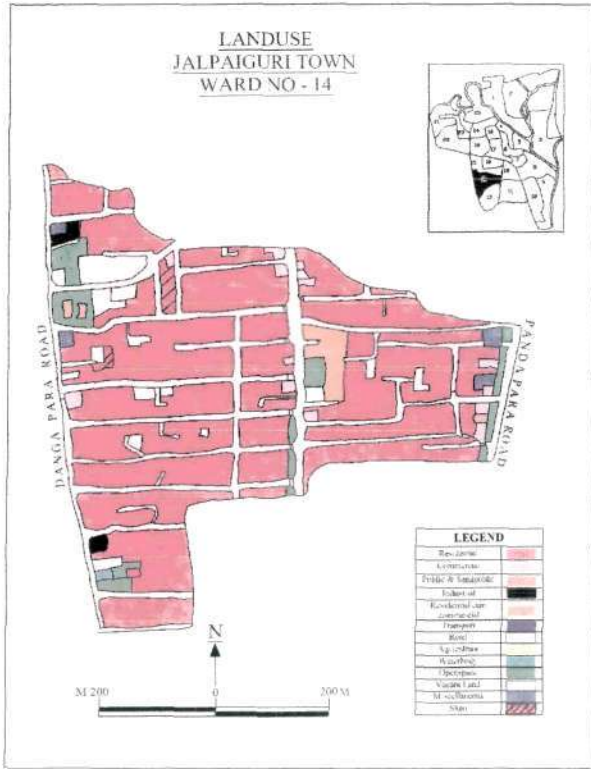


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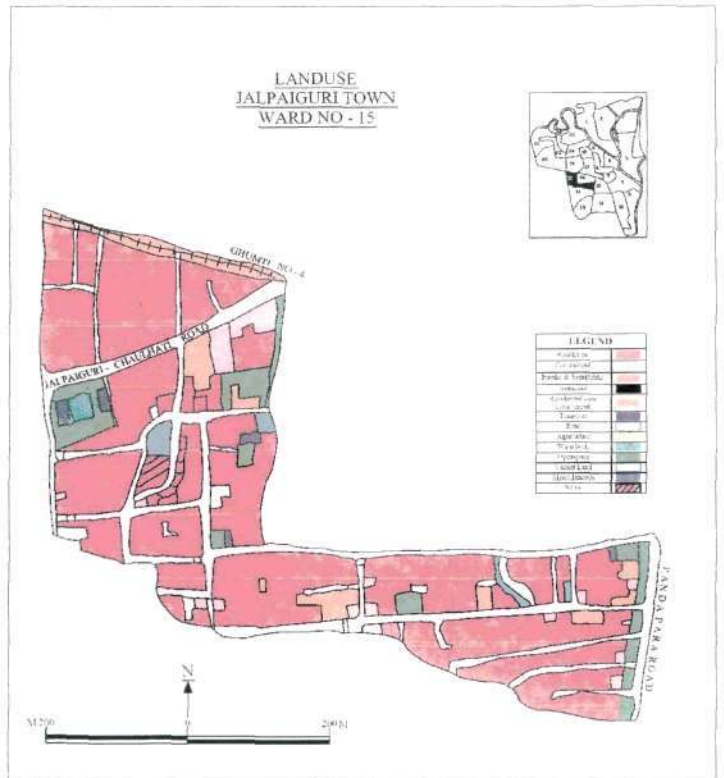


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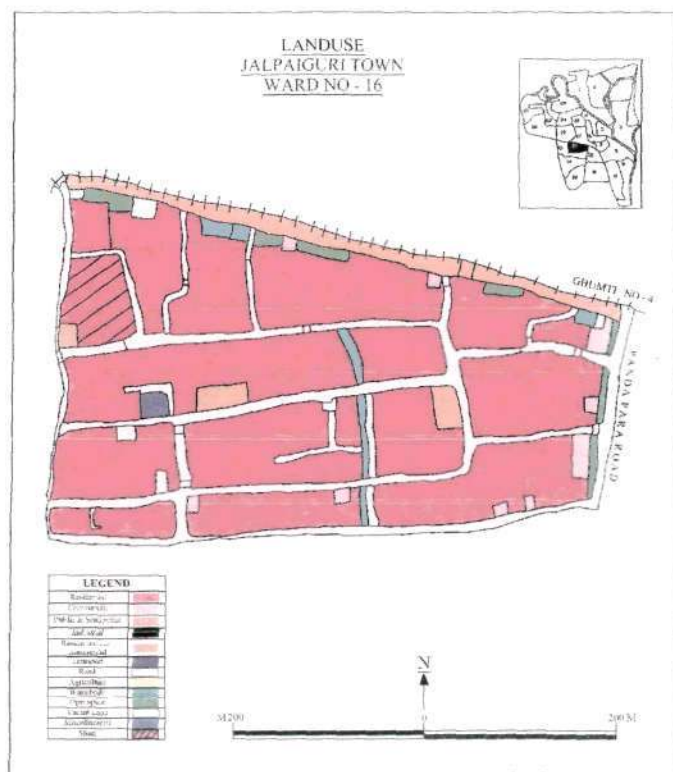


Fig- 4.20

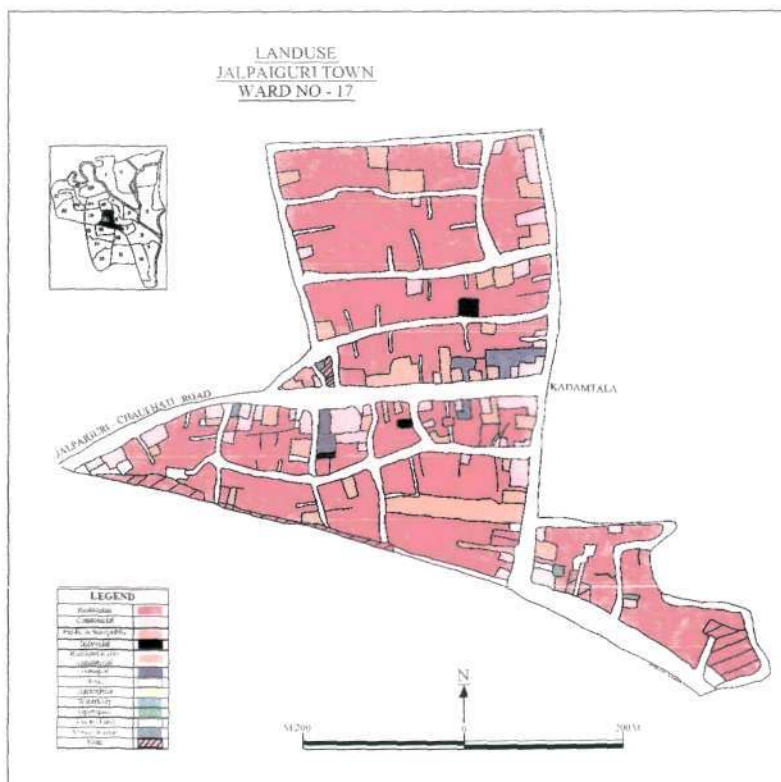


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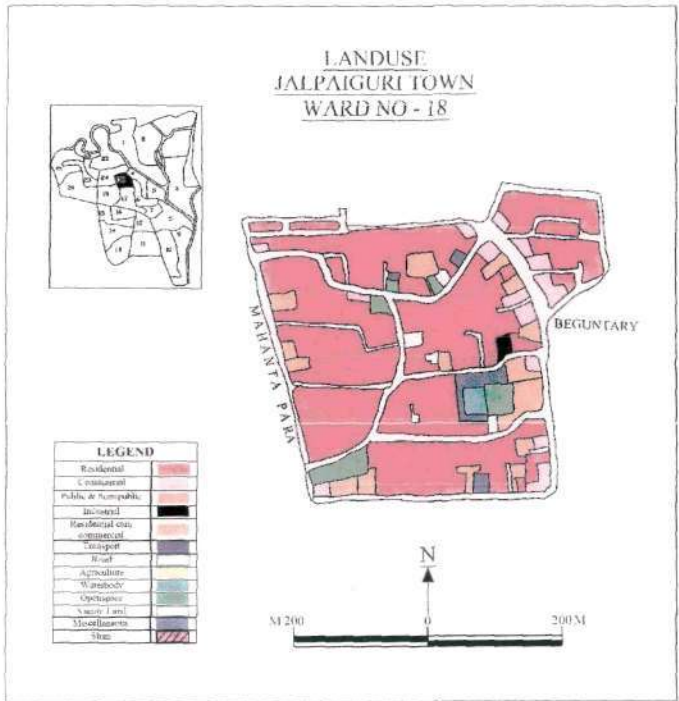


Fig- 4.22

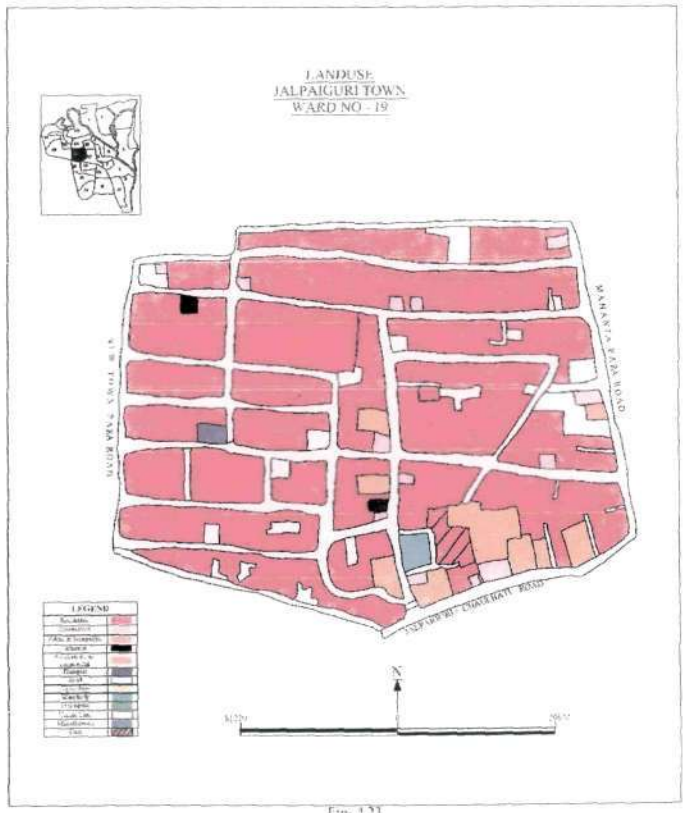
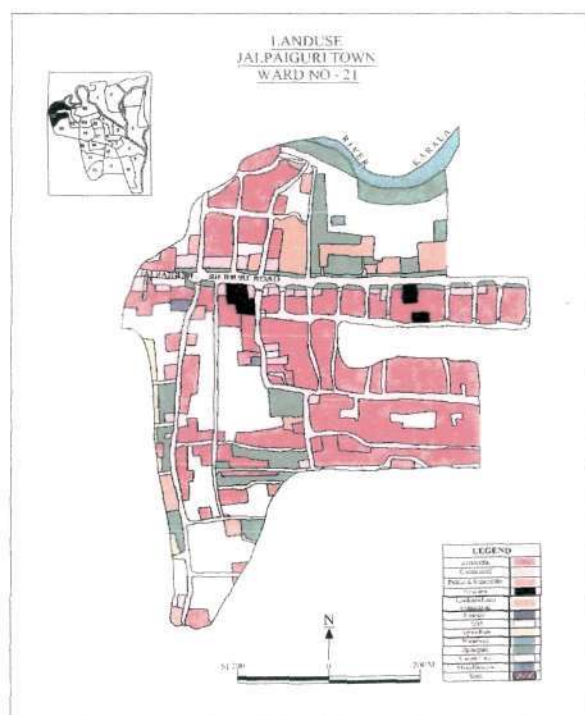
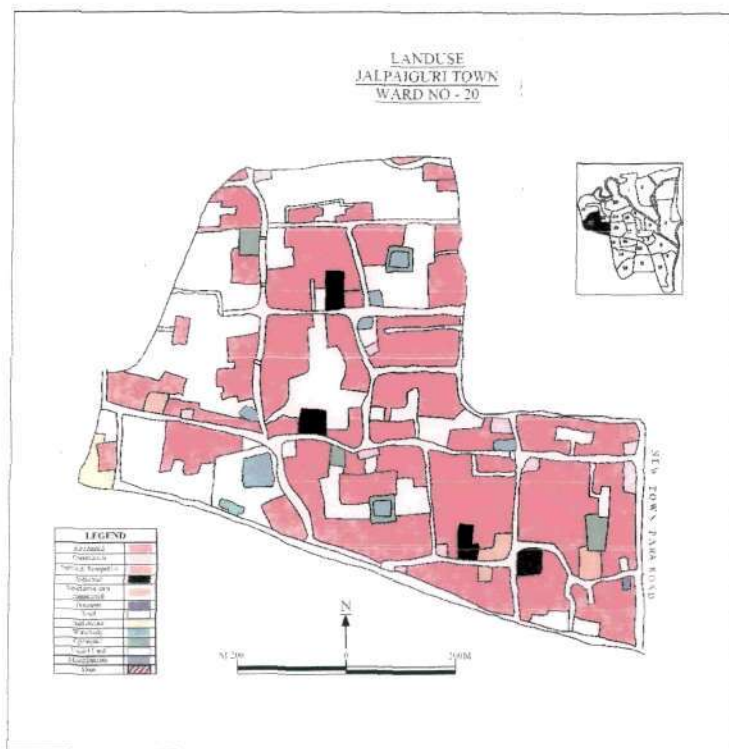


Fig. 4.23



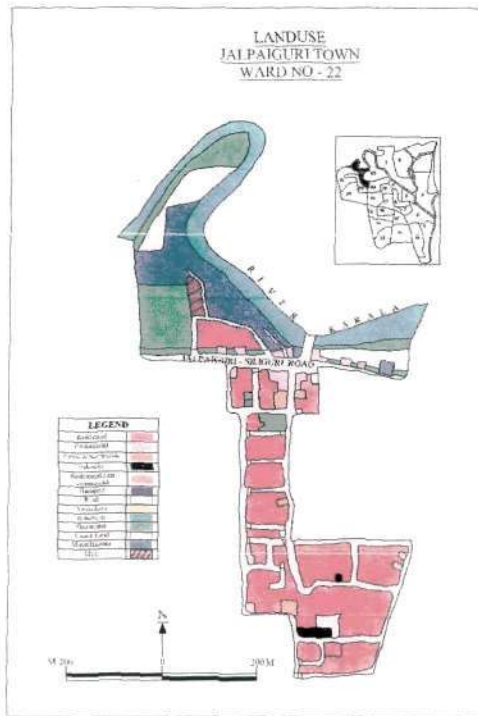


Fig- 4.26

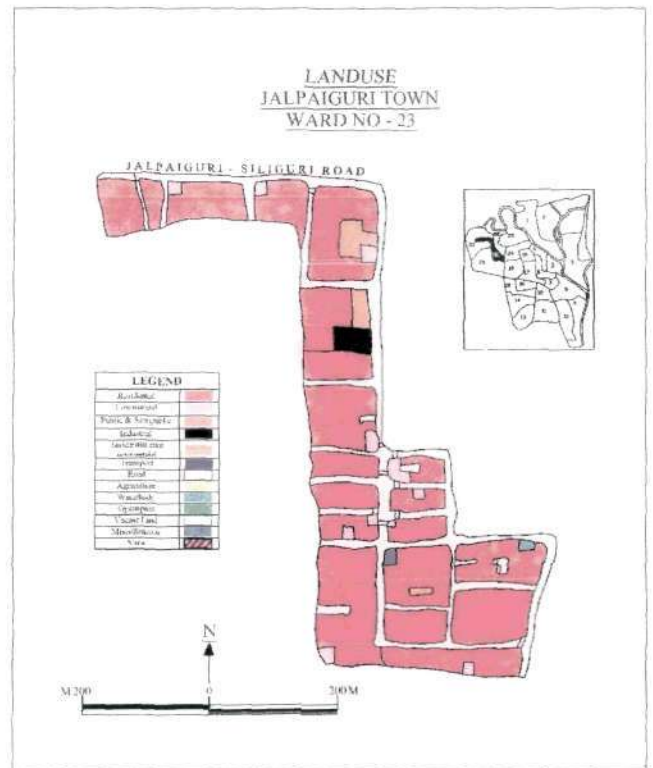


Fig- 4.27

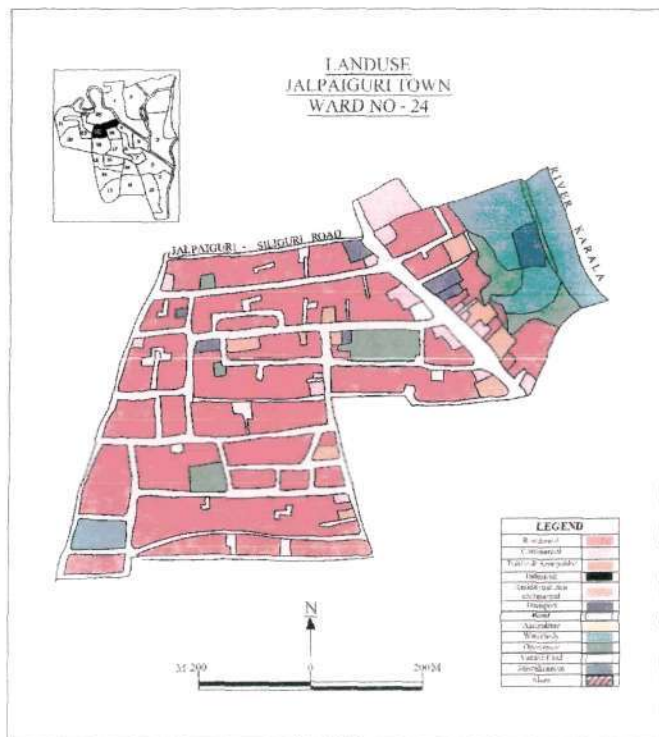


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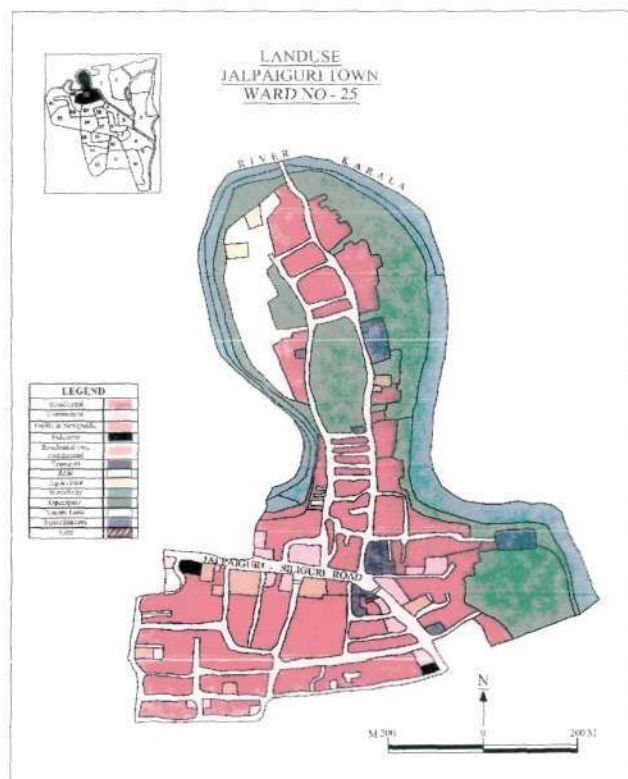
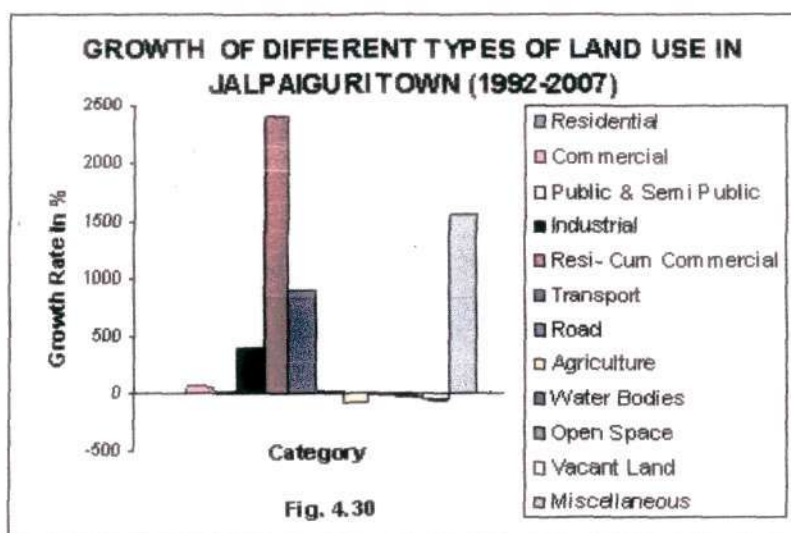


Fig- 4.29

4.3.4 Changing Pattern Of Land Use

With the growth of time the use of land changes specially in order to meet the new demands of society. The economic, social and political pursuits of man bring about a remarkable change in urban land use pattern. The availability of land is limited, so the transformation of land is therefore, an important aspect of land use study. The vertical growth and horizontal expansion of the town are controlled by integration and disintegration activities caused by attraction and dispersion forces. The spatial differentiation of activities results into the spatial structure of the town. The area of the town increased from 10.08 km² to 12.975 km² due to the addition of an area of 2.895 km² of land incorporated since 1995. The previous built up area, which was included with in the municipal boundary after 1995, shows maximum growth due to functional movement towards the fringe. Fig.4.30 shows that, the main urban functions i.e. residential, commercial, resi-cum-commercial and miscellaneous uses have experienced positive changes, as the percentage of lands under these use has increased with the increase of total area of the town.



4.3.4.i Residential Use

Residential use have increased by about +7.68% in the town and this is possible due to the availability of vacant land in the newly added area at the whole western part and south western part of the town. Main transfer of land from vacant to residential use has taken place in new six wards. About 25% of agricultural land of the town encroached by residential land use, and the maximum encroachment of agricultural land for residential purpose has taken place in present ward no 2. The demand for space has resulted fragmentation of land holding near C.B.D, and

the change of building types from single story to double storied become common in densely populated residential areas. Some multistoried residential flats added new color to the main business thorough- fares in the town.

4.3.4.ii Commercial

The growth of population in the town has also led to the expansion of commerce. Commercial use has increased by about 65% of the town. During last 15 years with the emergence of smaller marketing centre and new shopping ribbons, the total business area has considerably grown up. A narrow band of commercial development is found on both sides of the main arterials and extended in north western part along the Siliguri – Jalpaiguri Road and in southern part along the Haldibari Road in a ribbon form. Some isolated store clusters are developed with in the residential areas of the town. Residential-cum-commercial land use has also increased mainly near C.B.D.

4.3.4.iii Public And Semi Public Use

Land under public and semi public uses have also increased by 11.11% and mostly concentrate in the eastern part.

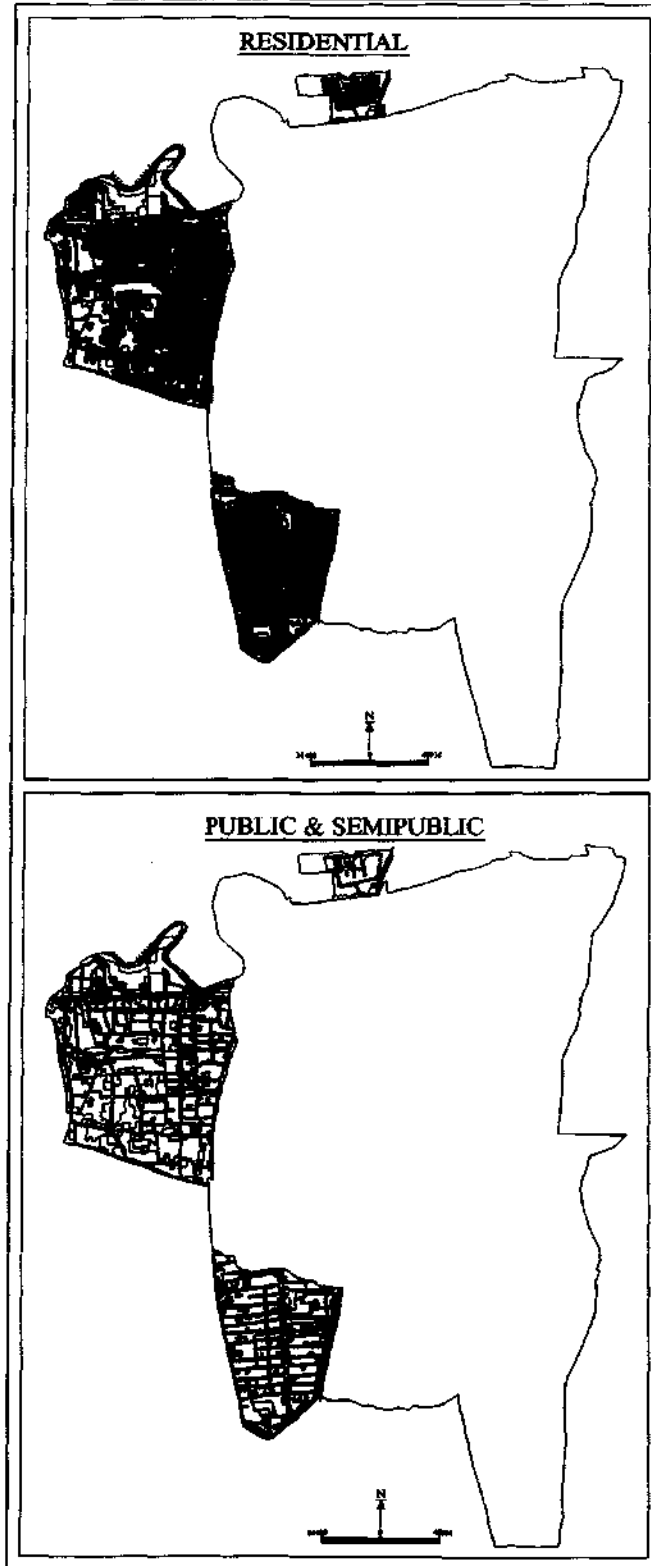
4.3.4.iv Agricultural and Vacant Land And Water Bodies

The remarkable decrease (~79.23%) is found in the amount of agricultural land. The encroachment of agricultural land for residential use is the main reason behind it. About 26.71% of previous agricultural land remain as same. About 48.29% lies as vacant land, which yet to be converted to their users in future. It is also found that vacant land has decreased by 47.5% because, vacant places has a tendency to decrease at a faster rate than any other urban use. Due to increasing land price and scarcity of land in the town, the water bodies are dwindling by 10%. Unauthorized encroachment and filling up are the main reasons behind this.

With the changing pattern of economic and cultural condition of the town a remarkable increase of miscellaneous land use is found in the town. The changes can be summrized –

- (a) The majority of vacant space with- in and around the town is transferred to residential use.
- (b) Multistoried buildings are increasing day by day
- (c) The commercial area become more congested due to the increase of both commercial and resi-cum-commercial land use. Hotels, restaurants, business flourished here.

CHANGES OF LAND USE (1992-2007)



CHANGES OF LAND USE (1992-2007)

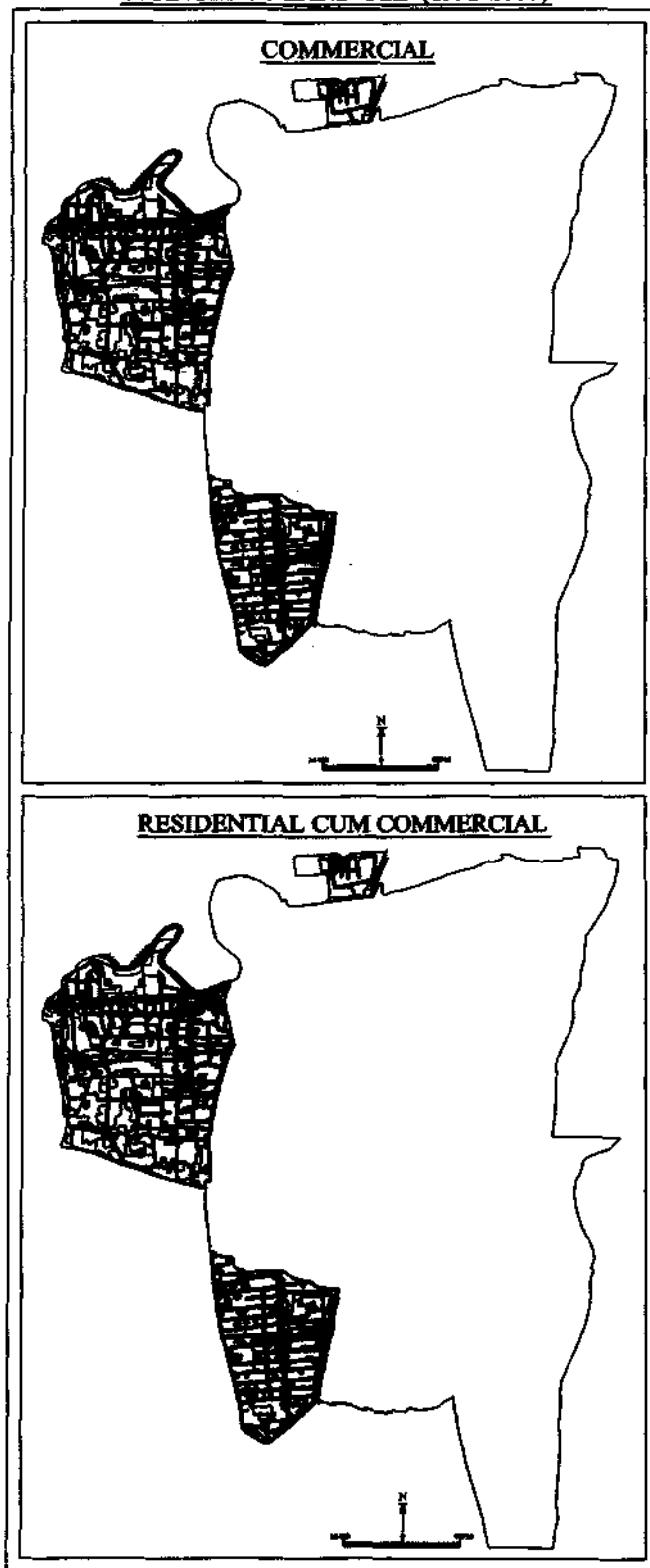


Fig - 4.32

CHANGES OF LAND USE (1992-2007)

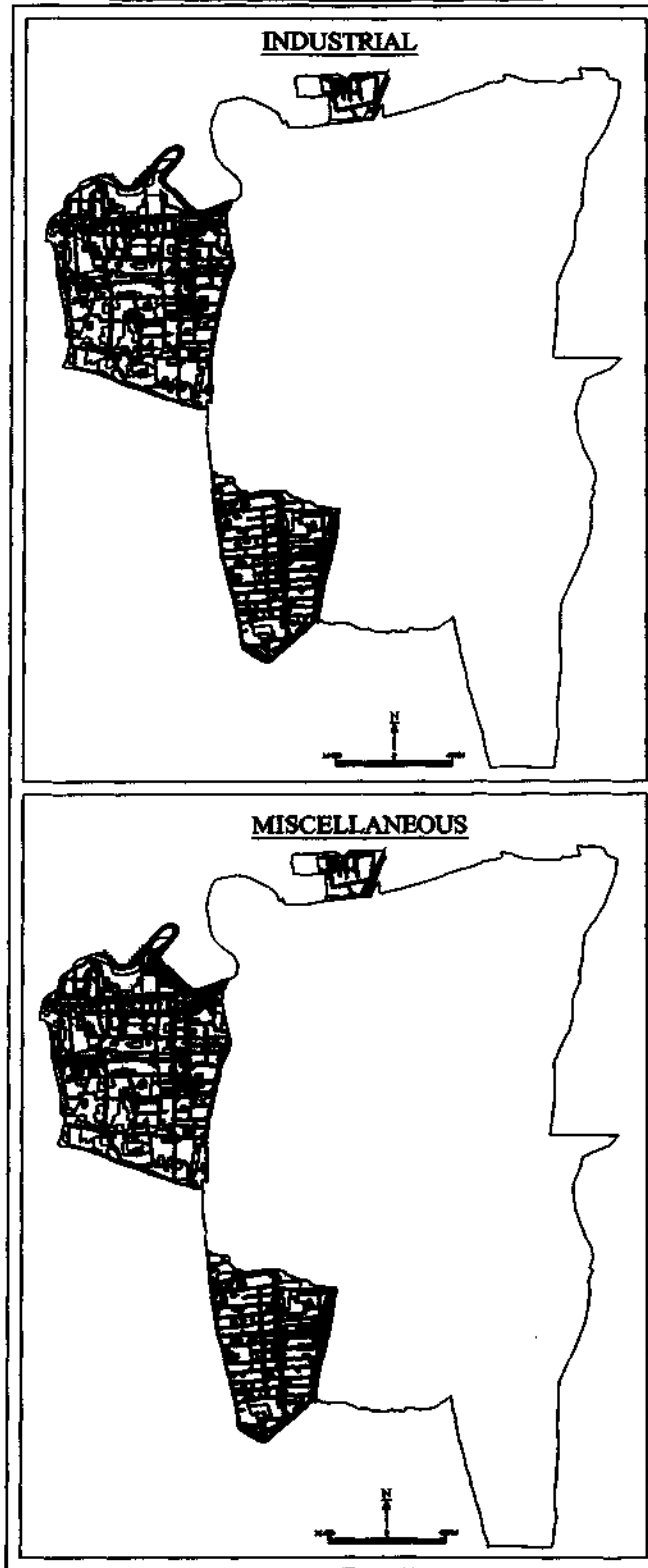


Fig-433

- (d) Many slums have occupied the vacant lands within the town, and along the embankment of river Tista.
- (e) Public and semi Public uses of lands are concentrated within a specific area, whereas scattered distributed in the past.
- (f) More roads and lanes are coming out in the newly added area
- (g) The percentage of miscellaneous use of land has increased in the town.

4.3.5 Direction Of Change

In all round development is found in the town (Fig-4.31 to 4.33), specially in south and north west directions. Among the different uses residential uses are expanding towards the western part of the municipality, whereas commercial land use is expanding towards north western fringe along Siliguri – Jalpaiguri Road, towards south along Haldibari- Jalpaiguri Road, and towards northern fringe along Jalpaiguri – Maynaguri Road forming a narrow band. The embankment of River Tista, and River Karala restricted the growth in the eastern and south-eastern part of the town. It can be said that the direction of growth of residential land use is not confined horizontally throughout the town, but also vertical growth is found in a form of multistoried buildings.

CONCLUSION

During the last 50 years, the town has developed by functions and growth of built up areas within and outside the municipal limits. Jalpaiguri is unplanned residential town, where the land use transformation is basically the outcome of competition among various land use classes. Though there is a planning authority (S.J.D.A), but the town developed haphazardly with time, and the central part of the town has become more congested, while on the other hand the town has expanded outward in a haphazard manner and swallowed the agricultural land in the fringe area which is less congested in nature. In Jalpaiguri a large number of functional units may have no fixed location or structure, which use the street side or public places unauthorized. The vendors or the bicycle repairers use temporarily any piece of land in the open air. In the so-called commercial core, people live side by side the shops or at the back or upper stores of shops. The spatial expansion of the town takes place mainly along the transportation arterials, which change the growth pattern from circular to linear. According to Misra (1978) every thing of basic

necessity are available in walking distance in this 'pedestrian town', which also encourages the compactness of the town. Various urban functions are so widely dispersed in the town, that predominantly residential areas also have retail shops, workshops etc. Some public or semipublic offices are also exist in residential areas with in the walking distance.

Jalpaiguri is predominating a residential town, which has least developed with its functions like commerce and trade, industry and others. The residential areas share the major area of the town. During the last 15years, 75% (2.174 km²) of the newly added area of 2.895 km² is occupied by residential purpose, which shows the positive growth of 7.68% under this use. Natural growth along with continuous emigration of rural people in search of jobs increase the population pressure in the town, which increase the demand of land for residential purpose. The location of administrative headquarters along with all other infrastructural facilities those are more attractive than the surrounding rural areas are responsible for the continuous increase of residential areas in the town. Fragmentation of land holdings helps to increase the intensity of land use for residential purpose near the C.B.D, and in the main residential area at the central part of the town. Morphology of Jalpaiguri town is also concern with the ground building and skyline of the houses vertical development of structure is formed in the town of multistoried buildings. Due to high cost of land in core area old one storied buildings are converted to multistoried building to cope up the demand. An increasing trend of multistoried building gives a new look to the vertical growth of residential use in the town. Some vacant lands of the town are occupied by slums for residential purpose. The slum areas a unique land use of Jalpaiguri town as well as in India. The slum area crops up with in a short period any where in the town in vacant or pen space.

As any other Indian town, in Jalpaiguri the streets are narrow and irregular. The town does not afford to have wide roads wasting valuable space for pedestrian, which is the reason of congestion in the core area. A considerable percentage is devoted to roads and streets (7%), which is quite natural for this town. Remote places are well connected by *pucca* roads with the main commercial center of the town. Five transport & Communication centres are developed in different places. This is due to lack of wide space for accommodated enough busses and trucks in one place.

In the municipality, the 3rd most important land use is commercial (6.6%). The demand for goods both for residents and daily commuters of the town, help to flourish the commercial activities, which shows the increasing trend of commercial use along the major business thoroughfare of the town. Isolated stores are scatteredly developed within the residential area to meet the daily needs of the residents. This also helps to increase the percentage of resi-cum-commercial use of land in the town. As the administration is most important in the town, the public, semi public offices are accommodated in different places besides having isolated pockets in the town. Many public and private use of lands such as educational institutions, nursing homes, libraries etc. are unevenly distributed, and show an increasing trend. During the last 15 years land under miscellaneous use has experienced the highest growth (+1550%) rate than other land uses. This is an evidence of growth both in area, and infrastructural condition of Jalpaiguri town. On the other hand, areas under agricultural land (-79.23%) open space (-20%) and vacant land (-47.5%) have been reduced due to pressure of population for accommodation and other purposes. Another peculiar feature of the urban land use in India is historical wastage – is the area set aside for the former British residence, which is also found in the town. It can be said that land under individual use such as residential use, public use are separated by other land use, due to lack of proper planning and implementation of standard land use practice in the town.

The morphology of town depends on human response to certain stimuli, which are not necessarily apparent everywhere (Ghosh. Sumita 1998). But the morphology of the town does not necessarily depend on its relationship with the C.B.D. only as set out in the classical models, various other linkages also exist. The availability of several amenities such as electricity, water, road-transport, education and mainly job opportunities encourage continuous immigration which further led to shortage of land around C.B.D and allowed buildings to grow vertically. So, it can be said that the morphology of the town has been changed with a fast increase in the aerial extent as well as the vertical growth of the town. Aerial photography mapping technique, addition of new dimensions and intensive field survey become the useful tool to the planners for identifying the existing morphology of the town and for the implementation of future developmental plans.

CHAPTER V

SOCIO-ECONOMIC CONDITION OF THE TOWN

INTRODUCTION

Public utility services and social, cultural institutions have been added to the landscape of the town from time to time. Urbanization is one of the most powerful indicators of socio-economic development of an area. And the socio-economic facilities play a catalytic role in the process of development of a region. Like any other urban centers, in Jalpaiguri town the Municipal authorities promote the basic amenities to the town dwellers. To represent the status of amenities and utility services in the town different information are collected through field survey along official information. This chapter deals with the living condition of the residents and several urban amenities along with economic infrastructural facilities.

5.1 EDUCATION

Education promotes development in all the sectors of the economy and yields high social and economic returns. The purpose of education is to make the people more capable to meet the needs of life. Jalpaiguri the administrative head Quarters of the district has a large number of primary, secondary, higher secondary schools, degree colleges, vocational training institutions etc. To analyze the present educational condition of the town, data are collected from DPEP and D.I. offices and field survey.

5.1.1 Distribution Of Students And Institutions In The Town

The rate of literacy depends on the proper location and educational institutions.

Table-5.1 WARD-WISE DISTRIBUTION OF STUDENTS IN PERCENTAGE

Students in %	Category	No of Wards	% of Wards
<1	Very Low	5	20
1-3	Low	7	28
3-6	Moderate	7	28
>6	High	6	24
		25	100

Source: DI & DPEP-Office, Field Survey

DISTRIBUTION OF SCHOOLS AND COLLEGES IN JALPAIGURI TOWN

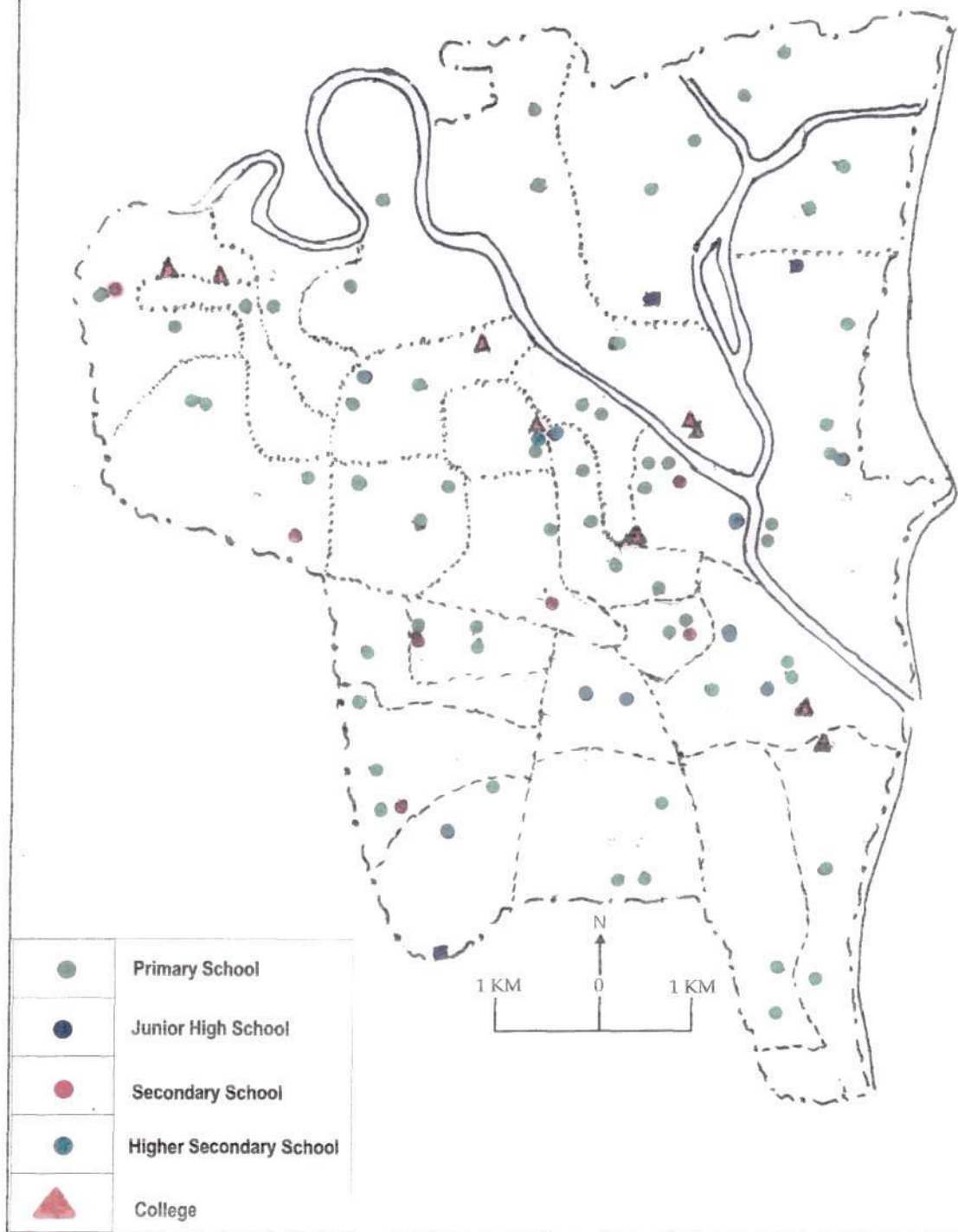


Fig - 5.1

The ward-wise distribution of students shows that, number of students is very low (<than 1%) in south- eastern and north- western parts of the town, which are shared by 20% of the wards. The percentage of students is high (>than 6%) near C.B.D. and mid-eastern part of the town, which is shared by 24% of the wards, due to high concentration of a number of schools.

Table: 5.2 **WARD-WISE DISTRIBUTIONS OF INSTITUTIONS**

Levels	Wards	No of wards	% Of Wards
Primary	2,4,10,11,13,19,22,23	8	32
Primary +Secondary	7,14,15,20	4	16
Primary +Secondary +Higher Secondary	-	-	-
Primary +Secondary +H.S. +College	5	1	4
		13	52

It is noticed that 52% (13 out of 25) of the wards have a combination of institutions of different levels. Among the wards 32% wards, have only primary schools, where as 16% wards have both primary and secondary schools. It is also noticed that only one ward (ward no5) has all type of institutions from primary to college level. So, It can be said that the level of institutions is low in peripheral area (Walkarganj, Pilkhana, BhanuNagar, Panda Para, Arabindra Nagar etc.), and very high in the central part (Thana Road, D.B.C Road etc). Figure 5.1 shows the distribution of schools and colleges in Jalpaiguri Town.



Plate-1 The Entrance Of Kadamtala School

5.1.2 Institution-Student Ratio

Table-5.3 WARDWISE DISTRIBUTION OF INSTITUTION-STUDENTS RATIO

Level	No of Institutions	No of Students	Ratio
Primary	72	9,561	1:130
Junior High	3	858	1:286
Secondary	7	3,894	1:556
H.S	11	11,043	1:1003
College	9	6,520	1:724

Table 5.3 shows that institution-student ratio is high (1:1003) in case of higher secondary level, where institutions is less in number compared to the number of students. Jalpaiguri town has 9 colleges including vocational colleges with in its municipal boundary, which reveals higher ratio (1:724) between the number of colleges and college going students. The numbers of institutions of junior high and secondary levels is also less in number compared to the number of students. The school student's ratio in primary level is lowest (1:130) as primary schools are spread over in each of the wards in the town in a good number. It can be said that the facility to obtain the primary education is much easier than other levels of education. Out of 9 colleges, 7 are situated with in the municipal boundary with 6,520 students, and the ratio between college going students is 1:724. Fig. 5.1 shows the distributional pattern of educational institutions, which reveals that, concentration of educational institutions is high in the western part of River Karala.

5.1.3 Teacher – Students Ratio

Table-5.4 TEACHER STUDENT RATIO IN DIFFERENT LEVELS OF INSTITUTIONS

Levels of Institutions	Ratio [Teacher: students]
Primary	1:27
Junior High	1:61
Secondary	1:35
Higher Secondary	1:34

In Jalpaiguri 761 teachers are engaged in teaching against 25,659 students in school level, so the ratio between teachers and students is 1:33. The highest number of students (4,078) and teachers (123) both are found in ward no 8. The lowest number of students (51) and teachers (2) are found in ward no 23. The teacher-pupil ratio is highest in junior high level (1:61) and lowest in primary level (1:27). The ratio of secondary and higher secondary level is higher than the ratio of primary level, which indicate the pressure of students on a teacher is more in secondary and

higher secondary level than primary level. And the low teacher-pupil ratio indicates the development in primary level of education in the town.

5.1.4 Boys And Girls Ratio

Table-5.5 WARD-WISE DISTRIBUTION OF BOYS-GIRLS RATIO

Ratio	Category	No of wards	% of wards
<0.5	Very low	7	29
0.5 - 5.5	Low	11	46
5.5 - 10.5	Moderate	4	17
>10.5	High	2	8
		24	100

The ratio between boys and girls students as a whole is 1:07, which indicate the difference between boys and girls is not so high. The difference between boys and girls students is lowest in secondary level (Boys: Girls-1:04) and highest in (Boys: girls-1: 1.3) Higher Secondary level. The ward-wise distribution of boys and girls shows that the ratio is very low (<than0.5) in 29% of the wards, where most of the schools are of co-education system, and high in 8% of the wards, where girls' schools are more in number. The highest boys and girls ratio (1:26) is found in ward no 17, and the lowest (1:0.1) is found in ward no 7,12, &13, boys' schools dominate those. Data is unavailable due to the absence of girls school in ward no 18.

5.1.5 Scheduled Cast And Scheduled Tribe Students In The Town

The ward wise distribution of S.C. students at the various level of education shows that the percentage is very low (<than1%) in 17% of the wards and high (>than8%) in 22% of the wards (Table-5.6). The S.C. students are high in the wards, situated in the eastern part of the town, and mainly at the southern part of the town.

Table-5.6 WARD-WISE DISTRIBUTION OF S.C. STUDENTS

S.C. Students in %	Category	No of Wards	% of Wards
<1	Very Low	4	17
1-4	Low	8	35
4-8	Moderate	6	26
>8	High	5	22
		23	100

Source: D.I & DPEP Office, Field Survey

The highest numbers of S.C. (770) and S.T. (85) students are found in ward 13 and 8 respectively, which are shared by 11.37% and 18% of the total S.C. and S.T. students of the town. The lowest number of S.C. (6) and S.T. (2) students are found in ward 23 and 17, which are shared by 0.08% and 0.4% respectively.

5.1.6 Infrastructural Facility

It is found that about 47% schools of the town have *pucca* classrooms and rest 53% has *kuncha* or partially *kuncha* classrooms. *Kuncha* structures are found mainly in the primary schools. The importance of water and sanitary facility in schools is not even. About 44% of the primary schools have no drinking water facility. Among the rest 60% schools have tap water, 18% use tube well for drinking purpose and 22% have other sources (pond or river water) of drinking water. But in secondary and high secondary levels all the schools have drinking water facility. Among these, 80% schools have tap water, 15% have tube well and 5% use well water. In primary level, 45% toilets are common and 55% toilets are made only for ladies separately. In secondary and higher secondary level only Purbanchal High and Arabindra Madhyamik School have co-education system, where separate toilet facility for both girls and boys are found. It is also noticed that in Primary level, 26% schools has electricity facility and 74% has no electricity supply at all.

5.2 HEALTH

Urban health condition is the result of a complex interaction of a variety of physical and human elements, some of them acting directly, others exercising indirect control (De Jayashree 1986). The health status of the people in any region largely depends upon the physical environment. Human health forms the fulcrum of the entire process of socio-economic development particularly in a populous and agrarian country like India (Mishra.B.N & Mishra. Manisha , 1996). Health is the most desired national asset, as it ensure efficiency at work to maintain optimum labour out put and capital output ratio in the process of development. The constitution of World Health Organization says,"enjoyment of the high standard of health is one of the fundamental rights of every human being". It can be said that health status is one of the important indicators of the welfare of the people. According to W.H.O. health issues are directly associated with housing conditions, sanitation and population.

5.2.1 Health Care Facility In Jalpaiguri Town

Jalpaiguri town has only one public hospital, named Jalpaiguri Sadar Hospital, which is situated in ward no1, with 54 doctors and 157 nurses in 2003. So, it can be said that the number of doctors per 10,000population is 5.4, which is not satisfactory. The number of nurses per 10,000population is 15.6, which is also inadequate. The hospital has 610 beds against 720

indoor patients per day. No of beds per 10,000population was 6.079 in 2003, which is quite inadequate. It is very common to find that a bed is shared between two patients. The number of ambulance in this hospital is only two (2).

The total number of indoor patients is 38,741, which is 29.66% of the total indoor patients (1,30,639) of the district, and total number of outdoor patient is 3,03,883, which is 18.77% of the total outdoor patients (16,18,670) of the district. At present the out patient department of Sadar Hospital render service to about 1000 patients each day, where as 720 patients have admitted in indoor each day. Figure 5.2 shows the picture of indoor and out door patients of Jalpaiguri Sadar Hospital (Municipality) in comparison to the district as a whole.

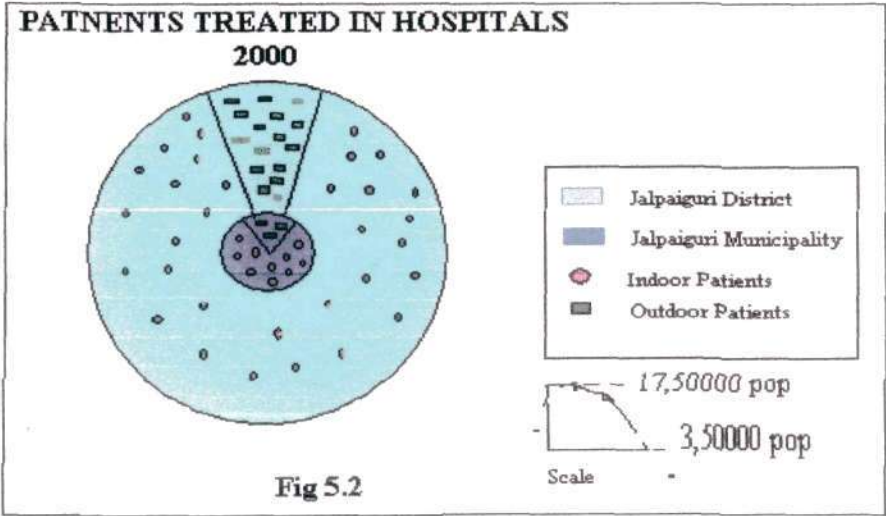


Fig 5.2

Analyzing the number and types of operations it is found that the highest percentage (39%) of the total cases of surgery is shared by Ligation and other surgery, which is followed by Gynecological surgery (10%), etc (Fig-5.3).

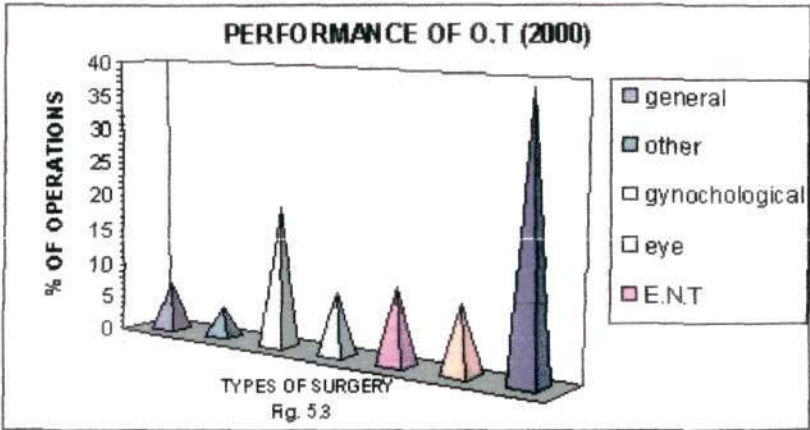
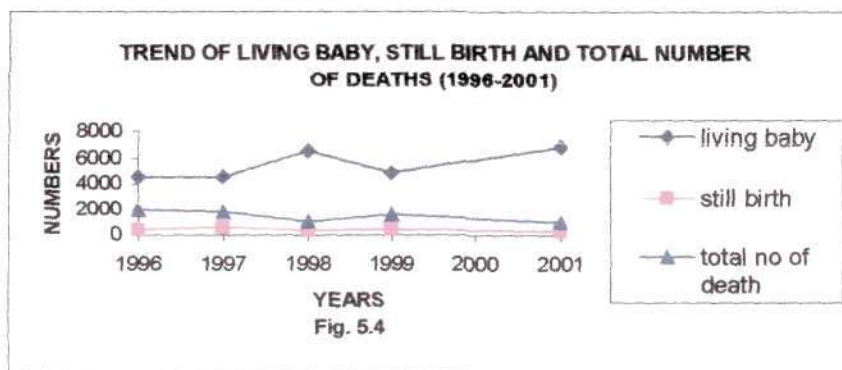


Fig. 5.3

Figure 5.4 shows the trend of number of living baby, stillbirth and total infant deaths from 1996 to 1999 as per annual records from Sadar Hospital. An increasing trend of death of living baby is found from 1997 to 1998, which decreased in 1999, whereas the trend of stillbirth decreased during 1997-1998. Again an increasing trend is found during 1998-1999. This is because of the poor health of the mother, parasitic and viral infections or inadequate dietary intake of mother. Unhygienic environment, contaminated food and water, infected needles are responsible for infant deaths. It is also found that hospital, public health centers, have played an important role in implementing Family Planning Programmes.



5.2.2 Other Health Care Facility of The Town

During field investigation, it is found that one family welfare center, a few private nursing homes and a number of medicine shops are located in the town. Rani Ashrumati Red Cross T.B. Hospital with 60 beds is situated at the outer part of the north of the town. Jalpaiguri Jail Hospital with a capacity of 60 beds and Police Hospital with a capacity of 30 beds are situated in ward no 1 and 8 respectively. Due to non-availability and insufficiency of medical facility, several private nursing homes are mushrooming in the town, such as Marina Medical Center (ward no 8), Eveland (ward no 10), Prasuti sadan (ward no 18), Eye Foundation (ward no 2) etc. So, it can be said that hospital and nursing homes are mostly concentrate at the northern part of the town and rest of the town have no public or private clinic, so, the people of southern part of the town have to cover more distance to get medicare than the people of northern or central part of the town. Now a day people prefer to seek medicare in private nursing homes. It is found that people have more faith on private sector, because an advanced treatment facilities of the private sector attracts them, where they are given special preference. A number of private dispensaries

are scatteredly situated in the town. It is also found that Homeopathic Medicare becomes very popular now a day. It is mainly due to the fact that these medicines are not costly and have no side effects. Apart from the allopathic medical practitioners, Homeopathic, Ayurvedic and non-registered quacks are also found in the town. As the distance is higher, the people of that area are latent to avail the hospital facilities instead of they prefer private clinic or elsewhere.

5.2.3 Diseases

The occurrence of many diseases is closely related to their environmental conditions. Some of the diseases are water borne. Adequate sanitation and safe potable water are necessary for the prevention of infections and water borne diseases. Over crowding also affects mental health of the people. It is found that there is a spatial and social variation in the disease pattern of the town, which is largely conditioned by the standard of living of its residents and the spatial distribution of different socio-economic classes.

Field survey reveals that Viral Fever ranks first among the diseases in the town. It is shared by 31% of the total cases of disease, and followed by Respiratory disease and Pneumonia (16%), Diarrhea and Dysentery (12%), Cardiac disease (8.9%) etc. Table 5.7 shows the rank wise major diseases, those affected the urban population of Jalpaiguri town. The maximum numbers of patients of Fever (315 persons /1000population) are reported in the town. Respiratory disease ranked 2nd and affected 101 persons /1000 population in the town. This is followed by Cardiac disease (89 persons /1000population), Dysentery (71 persons /1000population) etc. The minimum number of patients of Tuberculosis and Typhoid (6persons /1000population) are found in the town.

Table-5.7 MAJOR DISEASES AFFECTED URBAN FAMILIES OF JALPAIGURI TOWN

Rank	Name Of Disease	No Of Cases (in persons/1000pop)	Prevalent Wards (in no)	Percentage of wards
I	Viral Fever	315	23	92
II	Respiratory Disease	101	11	44
III	Cardiac Disease	89	11	44
IV	Dysentery	71	8	32
V	Pneumonia	57	10	40
VI	Gastroenteritis	55	7	28
VII	Diarrhea	54	6	24
VIII	Anemia	46	5	20
IX	Measles	44	8	32
X	Blood Sugar	38	5	20
XI	High Blood Pressure, Pox	32	4	16
XII	Hepatitis	28	7	28
XIII	Cancer	25	4	16
XIV	Tuberculosis, Typhoid	6	2	8

Source: Field Survey

It can be said that the virus are more active during transition of seasons and caused viral fever, Cold, Cough, Diarrhea etc. Respiratory disease is a crucial health problem of the damp environment of the town. Both Respiratory disease and Pneumonia account for a significant portion of the disease pattern as well as of infant mortality.

Analyzing ward wise distribution of communicable and non communicable disease pattern of the town (Fig-5.5), it is found that communicable diseases affected more or less the whole town, specially in the northern and southeastern part of the town, where the major slums such as Indira colony, Bhatakhana, Bihari basti, Shubhas Unnyan palli, Muslim basti, Paresh Mitra colony, Muchi basti etc. are situated. Spread of communicable diseases is very high (>50%) against the total case of communicable diseases recorded in these wards. The highest (22 out of 332 cases) number of communicable diseases are found in Shubhas Unnyan Palli and Muslim basti (ward no 9) and the lowest number (2 out of 332 cases) of communicable diseases is found in Babu Para, Marchent Road (ward no 5) area. Communicable diseases reflect poor housing and unhygienic living conditions in these wards. Communicable diseases like viral fever, Diarrhea, Dysentery, Measles, Chicken Pox have affected almost 80% of slum people with out exception of age and sex. Diarrhea, Typhoid, Fever, Intestinal parasitic infections

usually occur during rainy and summer season in the slum areas, because of insanitation and water logging problems. Poor housing permits the harboring of mice and rats, which can also be the carrier and transmitter of diseases. In slum household, the smoke produced by cooking fuel, which spread over the small room is one of the major causes of respiratory problem among infants. It is also found that as the women are deprived of proper nutrition and health care because of poverty, they suffer from malnutrition and Anemia. So, it can be said that congested, unhygienic and unsanitary environment in which the poor families live is the main cause of suffering from contagious diseases.

Non communicable diseases like Gastroenteritis, Cardiac disease, Blood sugar, High Blood pressure and Respiratory diseases affected mostly the people of residential zones (Babu Para, Mahanta Para, New Town para etc), which occupied more than 50% of the total recorded case of non communicable diseases of each ward. The main residential zones of the town are situated in these wards. The highest (22 out of 300 cases) and lowest (6 out of 300 cases) number of non-communicable diseases are found in Kadamtala, Ananda Para, Circular Lane and Hakim Para, Sen Para area respectively.

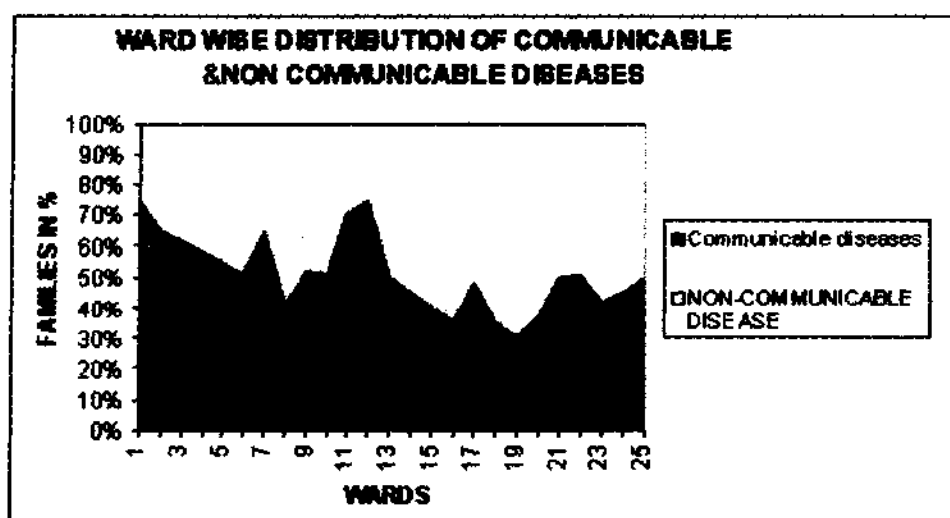


Fig 5.5

5.2.3.i Male Female diseases in Jalpaiguri town

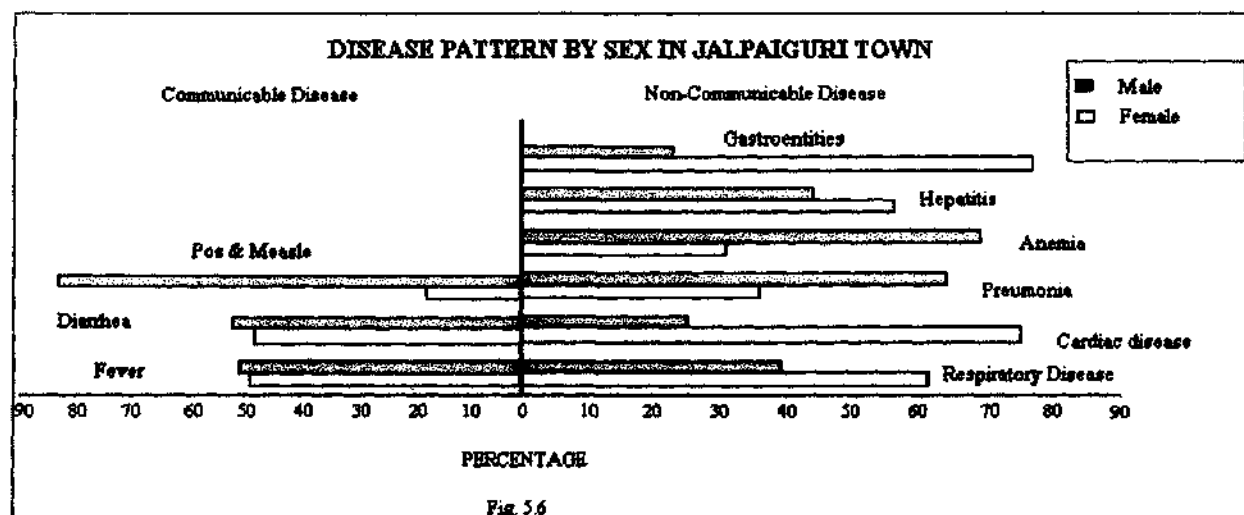
It is found that communicable diseases like Viral Fever, Diarrhea, Dysentery, Chicken pox, Measles are higher among females, while non communicable disease like Gastroenteritis, Respiratory disease, Cardiac disease etc. are more common among males (Table-5.8).

Table 5.8 DISEASE PATTERN BY SEX IN JALPAIGURI TOWN

Name Of Disease	No Of Patients			Percentage Of Patients		
	Male	Female	Total	Male	Female	Total
Communicable Diseases						
Viral Fever	97	102	199	49	51	100
Diarrhea, Dysentery	38	41	79	48	52	100
Chicken pox, Measles	8	40	48	17	83	100
Non communicable disease						
Respiratory disease	39	25	64	61	39	100
Cardiac disease	42	14	56	75	25	100
Pneumonia	13	23	36	36	64	100
Anemia	9	20	29	31	69	100
Hepatitis	10	8	18	56	44	100
Gastroentietis	27	8	35	77	23	100

Source -Field survey

During field survey, it is found that a higher percentage (69%) of female suffers from Anemia than male due to negligence, inadequate nutrition and health care. So, female become more liable to be infected. Fig (5.6) represents male-female disease pattern of the town.



5.2.4 Personal Hygiene And Health

Personal hygiene is very much related with sanitation as well as healthy which to be practiced by the individual at personal level. Washing and cleanliness is a part of a culture, which can protect human body from infections diseases. Women in our country maintain the health and hygiene of the household members, and maintain household cleanliness. Unclean hands, unpurified water, improperly stored cooked foods are the usual sources for infection. Slum people do not wash hand before taking meals. It is found that they rarely use soap for washing cloths, which led to the skin diseases. It is observed that in the sum area cooking is mostly done as the open pavement and the water used for cooking and washing is not at all clean. They use many time-ditched water for washing pots and utensils, which caused several water from diseases. Due to absence of proper lavatory facility the slum people use the open space as toilet, which increases the risk of infection. Personal hygiene also forms the baseline for community hygiene (Chugh & Seal 1971). Haphazard and uncontrollable dumping of solid waste is associated with health and environmental hazards.

5.3 TRADE ,COMMERCE AND INDUSTRIES

More than 5000 retail shops operating business in the town, where as it was 2306 in 1991, which indicate a sharp increase in the number of shops in the town. The major commercial activity of the town is carried-out through Dinbazar, which is located in the C.B.D of the town. The Dinbazar market was developed at the right bank of River Karala due to navigational facility of the river in the past. And now it became the main trade centre of the town. Four daily retail shopping centers names station market. Boilkhana bazaar, Bowbazar, Municipal Market have been developed at the northern, eastern, southern and central part of the town, those meet the needs of the surrounding areas of the town. Table 5.9 shows the distribution of different type of retail shops among the major 5 markets of the town

Table 5.9 THE PERCENTAGE OF RETAIL SERVICES SHARED BY DIFFERENT MARKETS (2006)

Types of Shop	Total no. of shops	% of shops	Dinbazar	Station Market	Boilkhana Bazar	Bawbazar	Municipal Market	
Food stuff	1402	75	40	32	14	9	5	100
Tobacco & Pan	87	5	57	14	8	9	12	100
Medicine & Chemicals	11	0.6	55	-	18	18	9	100
Foot-ware & Umbrella	26	104	92	-	-	8	-	100
Wooden, Metallic Furniture	22	102	18	405	9	14	54.5	100
Hardware & Sanitary Equipments	39	2.0	72	5	5	5	13	100
Electrical goods & Repair	14	0.8	36	14	7	7	36	100
Garments	207	11.0	97	1	2	-	-	100
Auto Repair	14	0.7	-	7	14	72	7	100
Miscellaneous	43	2.3	53	14	7	19	7	100
Total	1865	100						

Source:- field Survey

Considering the types of shops among the five markets, the highest percentage (75%) is shared by food items followed by garment shops (11%), Tobacco & Pan shops (5%) and others. Table 5.10 reveals specialization of items in different markets of the town.

Table 5.10 DISTRIBUTION OF RETAIL SERVICES IN DIFFERENT MARKETS (2006)

Types of Shops	Different Items In Percentage				
	Dinbazar	Station Bazar	Boilkhana Bazar	Bawbazar	Municipal Market
Food Stuff	62.4	94	90	77	66
Tobacco and Pan	6	3	3.23	5	9.4
Medicine & Chemicals	0.6	-	0.9	1.28	0.9
Foot-ware & Umbrella	2.6	-	-	1.28	-
Wooden, Metallic Furniture	0.4	0.2	0.9	2	11
Hardware, sanitary Fittings	3	0.4	0.9	1.28	4.5
Electrical goods	0.5	0.4	0.45	0.64	4.5
Garments	22	0.4	0.36	-	-
Auto Repair	-	0.2	0.9	6.4	0.9
Miscellaneous	2.5	1.4	1.36	5.12	2.8
	100	100	100	100	100

Source:- Field Survey

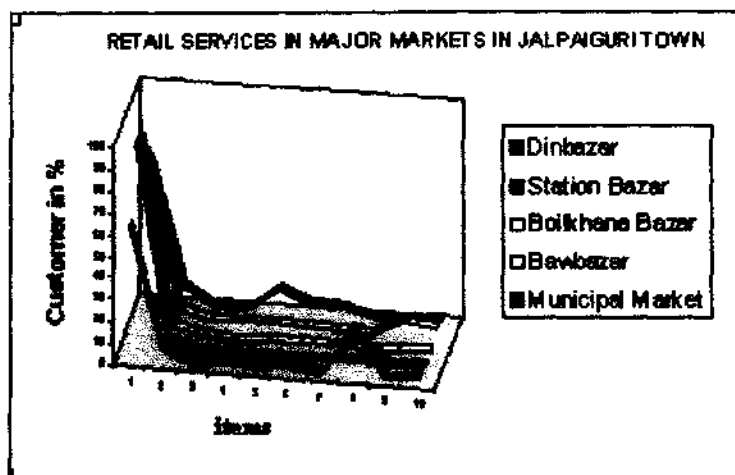


Fig. 5.7

i. DinBazar

The highest number of shops (906) is found in Dinbazar which is 49% of the total number of the shops of these markets. It is found that the main market Dinbazar with an area of 1.5 km² is specialized for varieties of items at one place. Dinbazar occupies the leading share of every item except furniture and electrical goods. Dinbazar is specialized for garment shops (97%) and hardware, sanitary equipments (72%) (Table 5.9). Among the different items foot ware, Umbrella shops (2.6%) and shops of miscellaneous items (2.5%) are dominant in Dinbazar. Medicine, electrical goods and repairs shops are the next two dominant items of Dinbazar. About 10-12 women traders are found in Dinbazar. There are separate zones of grocery, meat, fish, vegetable items, garments etc. Dinbazar is well connected with the main thoroughfares, so the accessibility is good with the other parts of the town. But the narrow, un-cleaned inner lanes, heaped with commodities on the pavements obstructed easy vehicular movements in this market.

ii. Station Market

Station market, the 2nd important market of the town is located near Railway Station (Ward 8) and shares 25% of the shops of the major markets. In this market a few stalls are under sheds and most of the vegetable sellers sit under open sky. Station market is popular for fresh vegetables, fish and other foodstuff (94% shops of this Market). A huge number of vendors bring fresh vegetables from Haldibari by train in the morning to sell in this market. It is observed that in this market there is no shop of medicine, foot-ware and umbrella etc. It is also found that due to the absence of proper layout, during rainy season the clayey surface becomes problematic for

the buyers. As the market is well connected with Zilla Parisad road, Nayabasti, Adarpara and mainly with Railway Station so this market is most accessible for its surroundings areas.

iii Boilkhana Bazar

The next important market, Boilkhana Bazar is located at the northern part of the town (ward 25) and shares 12% of the shops. Like others this market is also specialized for foodstuff (90% shops of the total). Along with food items this market has shops of medicine (0.9%), hardware, sanitary equipments (0.9%), electrical goods (0.45%) garments (0.36%) etc., which satisfy the daily requirements of a large number of people of the northern region of the town. Most of the shops of Boilkhana Bazar are of kuncha structure.

iv BowBazar

BowBazar is located in the southern part (ward 13) of the town. Except food items auto repair shops (6.4%), wooden and metallic furniture (2%) and shops of miscellaneous items (5.12%) are dominant among the total shops of this market.

V Municipal Market

This is the smallest among the 5 daily markets of the town. Municipal market is located near Kadamtala (ward 17) with an area of 0.5 km² and having only 109 (6% of the total shops) shops. Metallic item (11%), hardware, sanitary fittings (4.5%) are dominant in this market. This market is accessible for the people of central and midwestern part of the town.

Among the 5 markets the percentage of tobacco and Pan Stall is highest in Dinbazar (57%), and Lowest (8%) in Boilkhana Bazar. Race-course market is located at the south eastern part of the town (ward 10). It is a small one and dominated by tea stall, pan shop and grocery shops.

Vi Main Business Thorough Fares:-

Two important thoroughfares of the town have become important business ribbon as traffic flow is high (throughout the whole day) along these roads. As business streets D.B.C road, Merchant road, Jalpaiguri-Siliguri road possess a large number of shops of medicine, luxury articles, including garments and miscellaneous items etc. and well connected with Dinbazar.

Vii The Isolated Store Clusters

The isolated stores are scattered through out the town to serve the localities. These are developed on the street crossing in the residential areas. These are mainly stationary or grocery shops or tea or pan stalls.

5.3.1 Daily Consumers and Transaction In Major Markets

Market wise analysis of consumers shows that more or less 9,916 consumers visit Dinbazar per day, which is highest (38%) among the 5 major markets of the town and followed by Station Market (28%), Boilkhana Bazar (12%), Bawbazar and Municipal Market (12%) respectively. It is found that the buyers of food items are occupying the highest share of the total buyers of each market. About 88% of the total consumers in Station Market buy food items per day, which indicate that foodstuff is the most important item of the Station Market. Tobacco and Pan shop have almost equal share of customers among the different items. In Dinbazar, The 2nd important item is garment, which attracts 12% customers per day. Except Station Market each market has a important share of consumers of medicine & reasonable share of consumers visit auto repair shop, which is dominant among the total consumers of Bawbazar (8.5%) and Station market (3.3%). This is due to the location of truck and bus stand near Station Market and the location of Bawbazar at the side of Jalpaiguri-Haldibari road. Consumer of miscellaneous items is more prominent in Dinbazar (2.5%) and Bawbazar (2%.) Table 3.3 shows the percentage of daily consumers and transaction (in Rs.) of each type of shop in individual market of the town.

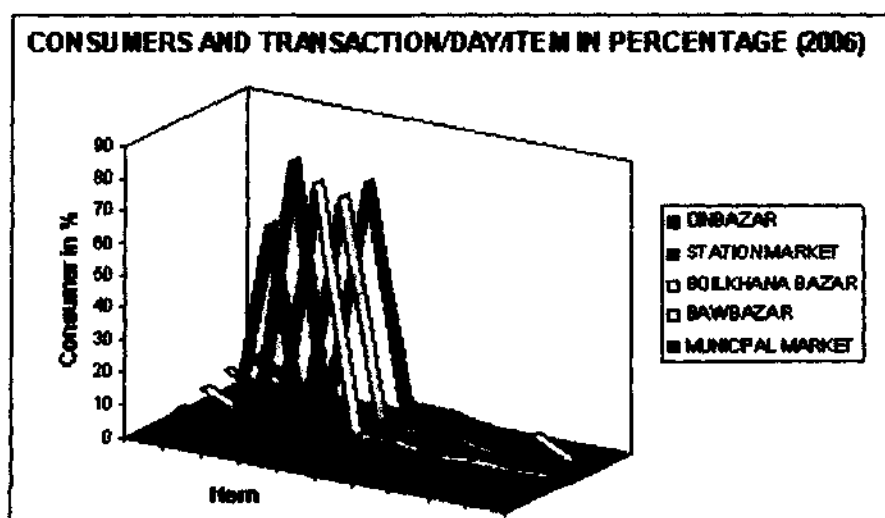


Fig 5.8

Table 5.11 CONSUMERS AND TRANSACTION /DAY/ITEM IN PERCENTAGE (2006)

ITEMS	DINBAZAR		STATION MARKET		BOILKHANA BAZAR		BAWBAZAR		MUNICIPAL MARKET	
	Consumers in %	Transaction in %	Consumers in %	Transaction in %	Consumers in %	Transaction in %	Consumers in %	Transaction in %	Consumers in %	Transaction in %
Foodstuff	72	77	88	90	78	35	70	59	71	57
Tobacco & Pan	4	0.5	5	1	8	4	10	3	10	1.5
Medicine	2	3.5	-	-	2.5	6	3	6	5	4
Foot-ware & Umbrella	0.3	2	-	-	2.5	-	0.3	2	-	-
Wooden, Metallic furniture	0.6	3.5	0.5	0.9	2.2	40	3	1	4.4	21
Hardware, Sanitary equipments	3	7	1	5	2.8	10	1.5	2.7	4	10.8
Electrical goods & Repair	1.6	3.5	0.8	0.8	0.3	1.3	1.7	3.3	2.3	5
Garments	12	1	0.5	0.3	1.3	2	-	-	-	-
Auto Repair	2	-	3.3	1.5	1	0.6	8.5	19	1.7	0.2
Miscellaneous	2.5	2	0.9	0.5	1.4	1.1	2	4	1.6	0.5
Total	100	100	100	100	100	100	100	100	100	100

Source:- Field Survey

In Jalpaiguri town 52% of the total transaction in Rs. is shared by Dinbazar, which is followed by Station Market (2.0%), Boilkhana Bazar (10%) and others. In the daily monetary transaction of each market, food items shared the highest portion to the total. It is found from table 5.11 is that hardware and sanitary item having a good share (5 to 10.8%) in the total monetary transaction of each market. Other than food item wooden and steel furniture in Boilkhana Bazar (40%), Municipal Market (21%) and auto repair in Bawbazar (19%) occupied a large share in the daily transaction (in Rs.) of these markets.

The tea trade based economy of the town was expanded at the end of the last century and the town became the whole-sale centre of goods of the district. After independence Jalpaiguri lost its position as the business centre of N. Bengal due to the emergence of Siliguri and ultimately exist as a retail business centre for the local people. The mail business activities are concentrated in and around C.B.D. and along the main thoroughfares of the town. At present Siliguri-Jalpaiguri shopping ribbon has a tendency to extend west-ward beyond the municipal boundary. The business activities along Mainaguri road has a possibility to expand in near future, as the proposed site for Circuit Branch of High Court and several government housing is located along this road



Plate-2 A Busy Commercial Centre At Kadamtala

INDUSTRIES

The nature of industries in Jalpaiguri town is local market Industry and consumer oriented. Several small-scale industries and cottage industries are scatteredly situated in the town while having a tendency to concentrate around C.B.D. According to district Industrial Centre there are 534 small-scale industrial units with 2,052 workers at the end of 2006 in the town. The average number of workers is 4 per unit. Table 5.11 shows the percentage of different industrial units and the distribution of workers in various industrial sectors in the town.

Table 5.12 DISTRIBUTION OF WORKERS IN VARIOUS INDUSTRIAL SECTOR IN JALPAIGURI TOWN (2006)

Type of Industry	No. Of Unit	% Of unit	No. Of Workers	% Of workers
Food stuff	77	15	274	13
Press or Publishing	79	16	292	14
Garments	55	10	173	9
Chemical	39	7	145	7
Wooden	22	4	99	5
Repairing of Electrical goods	101	19	313	8
Construction	47	9	151	29
Miscellaneous	47	9	151	29
Total	534	100	2052	100

It is found that most of the industries of the town are local market industries and locally owned industry.

Construction Sector:- The major type of industrial unit is construction sector which include grill factory, wellring factory, mosaic tiles and still furniture and is shared by 21% (114 units) of the total unit of the town. The highest percentage of total workers (29%) is also engaged in this sector. *Modern Furniture, Jajabar Steel Factory* are important for their products and located in western and northern part of the town.

Repairing of Electrical goods:- This is the 2nd important industrial sector of the town which is shared by 19% of the total units. About 15% workers (313 workers) is engaged in this sector.

Printing and Publishing sector:- There are 36 well established printing press and 43 allied units in the town in which about 292 persons (14% workers) are engaged. Most of these units are located on D.B.C road, and residential areas like Telipara, Ananda Para etc.

Table 5.13. WARD WISE DISTRIBUTION OF INDUSTRIAL UNITS

Category	No of units	No of wards	% of wards
Very low	<10	3	12
Low	10 - 20	7	28
Moderate	20 - 30	10	40
High	>30	5	20

source:- Field Survey, District Industrial Office

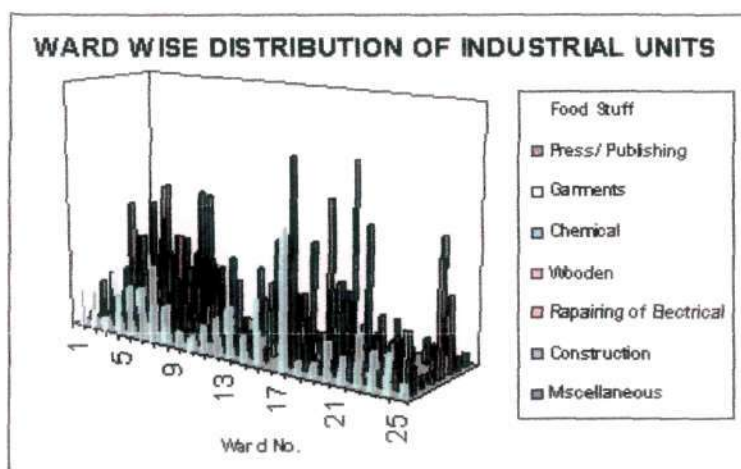


Fig. 5.9

Ward wise distribution of industries (table 5.12 fig- a), shows that industrial units is very low (<10 units) in 12% and very low (10-20%) in 28% of the wards. Their wards are situated in southern and western fringe of the town. The study reveals that foodstuff, chemical units are dominant in fringe area. A moderate member of (20-30 units) industrial units is found northern, eastern and central part of the town, which is shared by 40% of the total wards of the municipality. These units are mainly of machinery, vehicle-repairing industries and of miscellaneous units. Industrial units in high (730 units) in C.B.D. and along with the main business thoroughfare, which is shared by 20% of the wards. The lowest number of units (1 unit) is found in Mahamaya Para area (ward 16), which is unsuitable for any industry as this ward has a problem of water logging. Fig-5.9 also reveals that construction works are dominant in residential areas.

5.4 FINANCING INSTITUTION

Bank plays a very important role in the economic development of a country. Today nationalized banks have come to occupy a significant place in the Indian banking system. In Jalpaiguri town out of 15 banks except Khestriya Gramin Bank all one nationalized. Among this State Bank Of India is the largest having 2 branches and 200 employees. The other lead banks are Central Bank Of India, United Banks of India, Bank of India etc. The average share of population per bank is about 6690 persons. A number of financial institution such as life Insurance Corporation of India, Oriental Insurance Company, Bazaz Allianz private Limited, Co-operative Banks etc. with their several branches are present to meet the need of commerce and industries in the town.

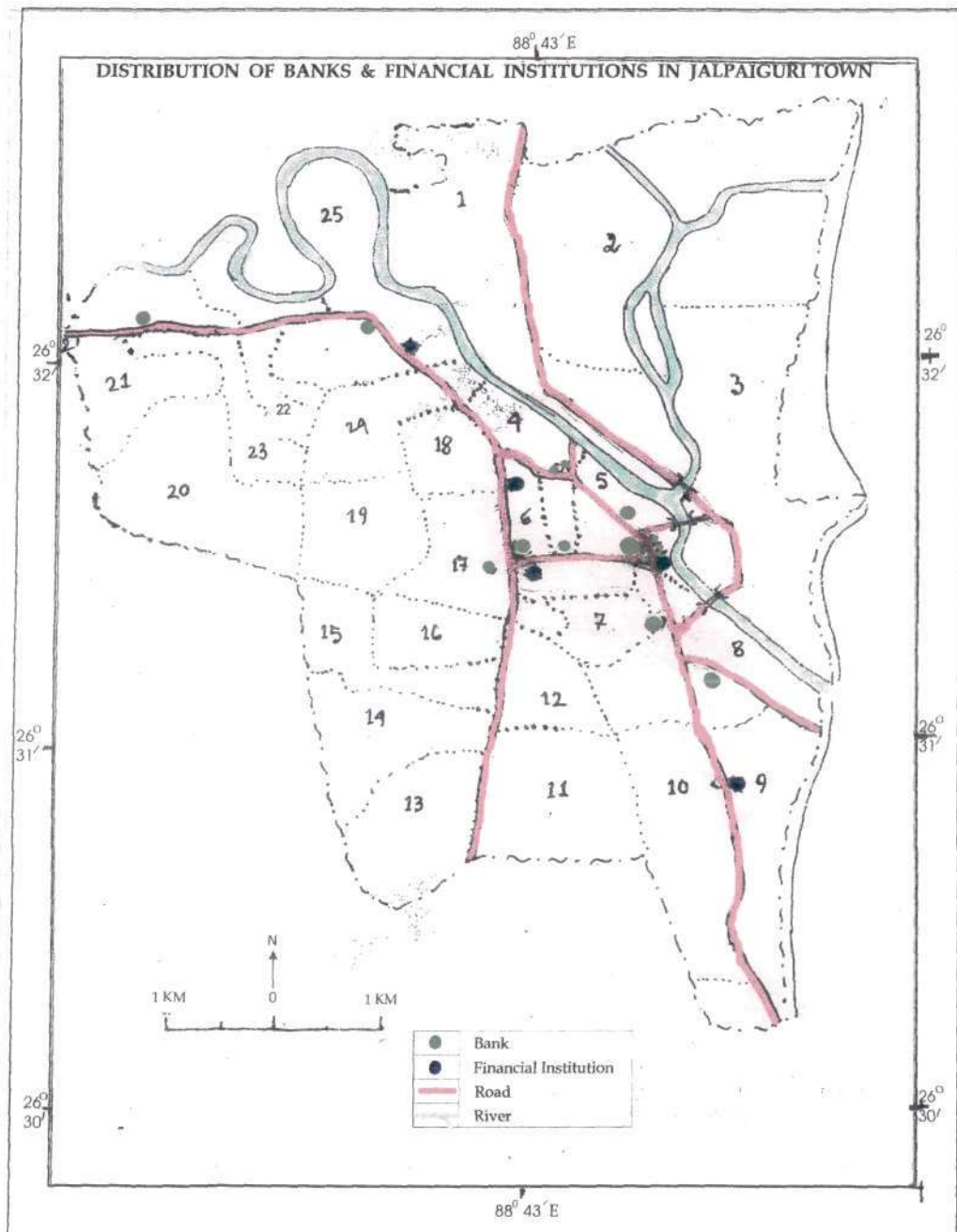


Fig - 5.10

From the locational point of view all the banks are concentrated in the C.B.D and along the main through fares except S.B.I main Branch (ward 8), Indian Overseas Bank (ward 8,11) and a branch of U.B.I. (ward 25). Fig-5.10 shows that there is no bank in the northeastern, southern and in the eastern part of River Karala. So, it can be said that the banking service is not easily assessable for a large number of people of Bose Para, Arabindra Nagar (ward 20, 22,23), Adar Para, Panda Para, Danga Para (ward no 11, 13, 14, 15), Rajbari Para, walkerganj, Sen Para (ward no – 1, 2, 3) etc.

5.5 TRANSPORT & COMMUNICATION

Transportation lines act as the lifeline for urban development. The economic development of an area on a region on the country is very much dependent on the proper development of its transport system (Singh. R.C.2003). Transport is necessary to satisfy the function and utility of a place. The development of transport is depended upon geographical features of the area, relative accessibility, developmental control and dynamic process (Mandal. R.B.1989). The study of the transportation systems of Jalpaiguri shows that road transport is the most efficient transport system of the town. But a great volume of long distance commercial goods traffic is carried by rail transport.

5.5.1 Route System

Jalpaiguri, the administrative head quarters of Jalpaiguri district has long history of road and railway communication. Siliguri – Jalpaiguri state Highway, Jalpaiguri – Haldibari road, Jalpaiguri – Chaulhati road, Jalpaiguri – Maynaguri roads are the major arterial roads of the town (fig-5.11). National Highway (NH 31) and State Highway (SH 12) connect Jalpaiguri town with Kochbihar and Darjeeling districts. The National Highway no. 31 bears a special significance to the town, because it passes through the northern fringe of the town. Roads interlink all the parts of the town. These roads spread more or less parallelly to each other and ultimately formed a rectangular pattern of road network in the town. The strategically important Haldibari State Highway passes through the township in a north – south direction – D.B.C Road, Merchant road, Kadamtala road, Station road etc. are the major roads of the town. It is also found from Fig-5.11). That the wards situated at the right bank of river Karala are highly communicated than the wards at the left bank of Karala.

STREET PATTERN IN JALPAIGURI TOWN

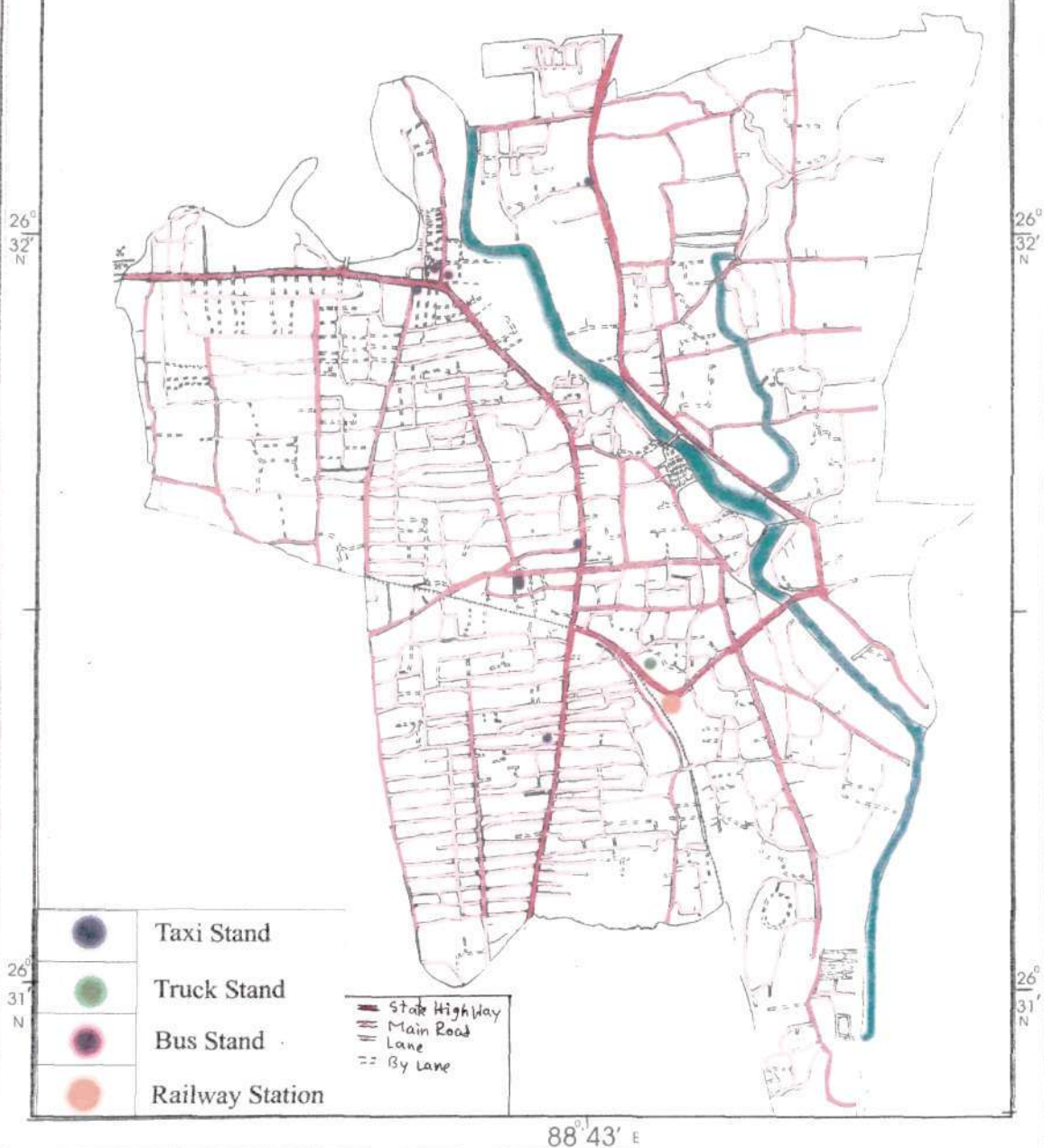


Fig - 5.11

There are 5 railway level crossings out of which 4 no Ghoomti, 3 no. Ghoomti, and 2 no. Ghoomti are very important. Jalpaiguri Railway station is situation near the heart of the town (word 8). The total length of metalled road is 114.75 km, and the width of Lane and by-lanes are 5 to 6 metres and 3.5 – 4 metres respectively.

5.5.2 Frequency of Buses

The study reveals that Siliguri – Jalpaiguri Highway is the most busiest road as the maximum number of trips recorded in this road. Distance between Jalpaiguri town and other centers, frequency of buses, and total volume of passengers has been shown in Table 5.14

Table 5.14 MAJOR BUS ROUTES AND FREQUENCY OF BUSES

Routes	Distance (in km)	No. of Buses	Total Passengers
Jalpaiguri – Siliguri	45	46	22866
Jalpaiguri – Maynaguri	17	10	33,742
Jalpaiguri – Dhupguri	40	11	23,190
Jalpaiguri – Malbazar	65	47	10,552
Jalpaiguri – Odlabari	40	5	1204
Jalpaiguri – Jaigaon	105	3	386
Jalpaiguri - Birpara	65	20	7842
Jalpaiguri – Chamurchi	95	30	5760
Jalpaiguri – Alipurduar	120	24	3372
Jalpaiguri - Kochbihar	100	21	2896
Jalpaiguri – Falakata	90	23	3340
Jalpaiguri - Haldibari	25	34	9228
Jalpaiguri - Chaulhati	20	1	342

Source:- N.B.S.T.C. MiniBus Syndicate Super Bus Syndicate

During field survey it is found that buses have different seating capacity. State bus carries 51 seated and 35 (avg.) standing passengers per up and down trip per day. Super buses with 43 seated and 40 (avg) standing passengers, mini buses with 27 seated and 30 standing passengers and Maxi buses with 18 seated and 25 standing (Avg.) passengers run to and, Jalpaiguri town per trip/day. Table 5.14 shows that Maynaguri located only 17 km apart from the town, which is the nearest among the centers, and the total number of buses is only 1 bus runs between Jalpaiguri and Chaulhati.

TRAFFIC FLOW CHART

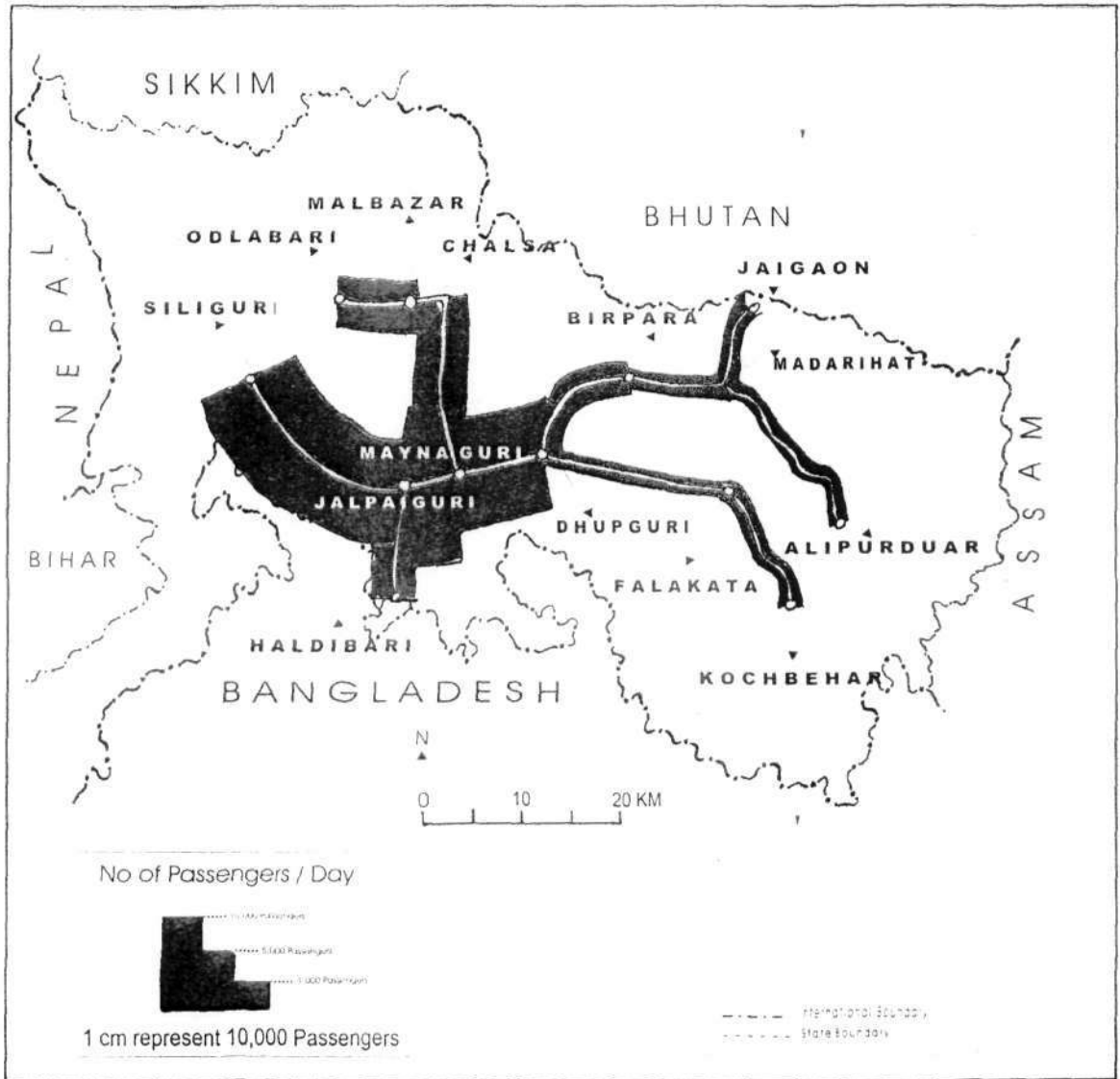


Fig - 5.12

5.5.3 Passengers Flow

The flow chart (Fig. 5.12) shows that the daily flow of buses from Jalpaiguri to other centers is restricted to Kochbihar district and Siliguri of Darjeeling district. The highest passenger flow per day is found between Jalpaiguri and Mainaguri (33742 persons/day) that is followed by Jalpaiguri – Siliguri (22,866 persons/day) route. The lowest passenger flow per day is found between Jalpaiguri and Jaigaon (386 persons/day) Table 5.14). So, it can be said that connectivity is high between Jalpaiguri to Siliguri and Jalpaiguri to Mainaguri.

5.5.3.i Flow With In The Town

The composition of traffic on the road network in the town is heterogeneous. Both motorized and non-motorized transport is found in the town within the town people moves by cycle or rickshaw or by two wheelers. Among the three (3) bus terminuses, the private Duars Bus Stand and North Bengal State Transport Corporation Bus Stand are located in Santipara (ward 25), and Siliguri – Jalpaiguri Bus Terminus is situated near Kadamtala (ward 17). One truck stand (ward 7), four (4) taxi stand (ward 1, 14, 17, 25) are found along the main through fare of the town. It is found that D.B.C road and Marchent roads are the most busy road in the town. Table 5.15 shows the traffic flow in four major junctions in the town. About 1921 pedestrians 3248 cyclists, 4789 rickshaws, 1497 scooters, 732 cars, 228 buses, 43 trucks and 183 vans pass through the junctions during the peak hour (10-11:30 am) per day. The highest flow is found at Dinbazar More. The lowest flow is found during 2-3 p.m. through the major roads.

Table 5.15 PEAK HOUR CONDITION (10-11:30 A.M)

Place	Non-Motorized			% of total	Motorized					% of Total
	Pedestrian	Cyclist	Rickshaw		Scooter	Car	Bus	Truck	Van	
Kadamtala	377	805	1294	25	295	168	45	12	36	21
Dinbazar	950	908	1050	29	469	204	74	20	96	32
Head Post Office	294	705	1195	22	492	250	69	2	31	31
3 no. Ghoomti	300	830	1250	24	250	110	40	9	20	16
	1921	3248	4789	9958	1497	732	228	43	183	2683

Source:- Field Survey

It can be said that highest volume of traffic flow is found at these four centres during morning and evening. Many educational institutions like schools, colleges, offices are located in and

around Kadamtala, Head Post Office more, and near Dinbazar. During 10-11:30 a.m there is a great rush of office, school and college goers. Similarly, during 4-5:30 p.m highest volume of traffic flow is observed in the market areas at Dinbazar and several working places from where people return to their home. The highest percentage (29%) of pedestrians and non- motorized transport (cycle, rickshaw) and motorized transport (32%) of bykes or scooters, cars, buses, trucks, vans are found at Dinbazar more which is situated near C.B.D of the town. Cyclists, pedestrians and rickshaw pullars extensively use several inner roads. Fig. 5.13 shows the peak hour condition at major points in town.

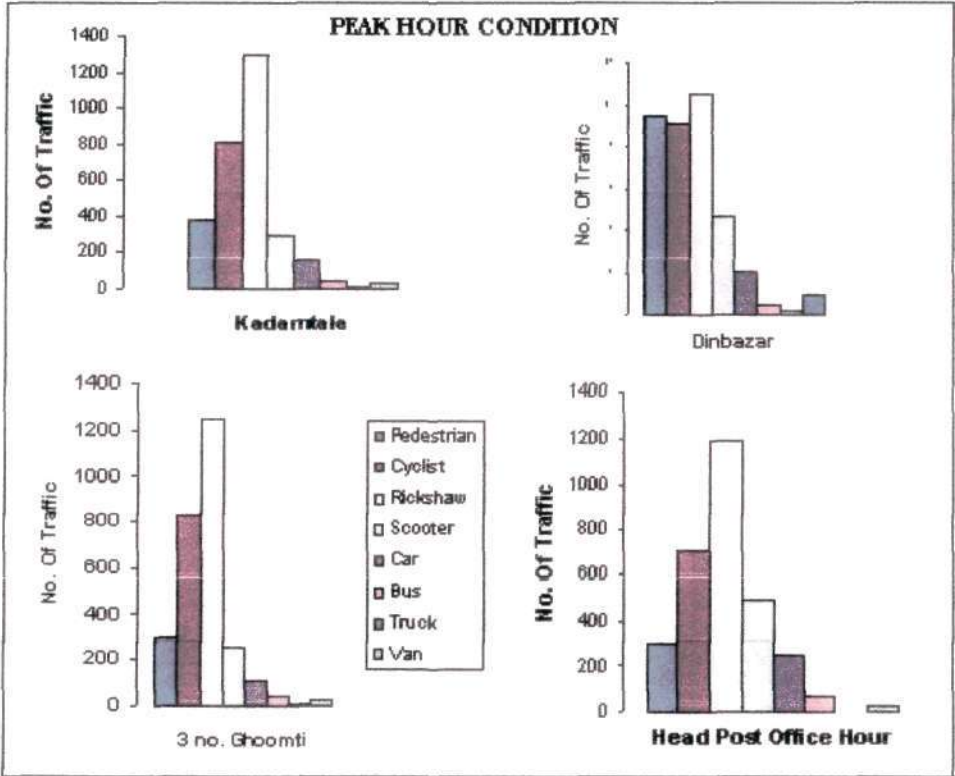


Fig. 5.13

5.5.3.ii Transport With in The Town:-

Field Survey reveals that 53% of the office goers use two-wheeler, 27% use cycle and 6% walk on foot. About 11% people goes to their workplace by rickshaw. The lowest percentage (3%) of working people use cars, which is common among doctors, administrative officers etc. and mostly found in Race Course Para (Ward 8) D.B.C road (Ward 4) and other areas. It is also found that 60% of the slum people travel 1 to 5 km with in the town by cycle and rest 40% moves on foot.

Table 5.16 DISTANCE OF WORKING PLACE AND MODE OF TRANSPORT

Distance in km	Place of work	Mode of Transport	Percentage
<1	In and around C.B.D	Foot and Cycle	16
1 - 3	Middle part of the town to Administrative Area	Cycle and Rickshaw	27
3 - 5	From Western and Northern Zone to C.B.D	Two wheelers and Rickshaw	34
>5	From Northern, Western, Southern Zone to Administrative Area	Two wheelers and Rickshaw	23

Source:- Field Survey

There is a relationship between the Distance of working place and mode of Transport. About 16% people prefer to move on foot or by cycle when workplace is situated within 1 km from their residence. The mode of transport changes with the increase of distance between house and work place. It is evident from the table 5.16, that 34% of the office goers used two wheelers and rickshaw to cover 3 to 5 km distance from their residence.

Field survey also reveals that, about 40% consumer use to visit marketplace on foot because markets are situated almost in every part of the town. About 25% purchaser travel by cycle and 45% by rickshaws to Dinbazar, the main market of the town. It is also found that the main modes of Transport for students are rickshaws and vans. Cycle is more common among boys.

5.5.4 Road condition

The average width of roads in the town is not sufficient for traffic flow. The roads of the town are full of dirt and garbage. Huge amount of soil and debris are dumped along the roadside during unplanned construction of pucca drains and houses, which caused obstruction for movement and caused road accidents. Water logging hazard affected road condition of the left bank of river Karala, mid-western and Mid-southern part of the town. As Jalpaiguri lacks in proper storm water drainage, the roads at Natun Para, Mahamaya Para, Panda Para etc. become water logged even after a medium shower. It is also very common during rainy season that the roads along the bank of river Karala experience minor flooding due to overflowing of Karala.

5.5.5 Condition of Bus Stand

The condition of N.B.S.T.C. Bus Stand is very poor. There is no proper shades for buses and passengers comparatively a better situation is found in Duars Bus stand which has a waiting room and lavatory facility for passengers. Municipal authority constructs shades for passengers at the major bus stops.



Plate – 3 A View Of Kadamtala Bus Terminus

5.5.6 Traffic Congestion

Traffic congestion is a common feature in Jalpaiguri town. During peak hours (10-11:30 a.m) heavy traffic congestion is found in Kadamtala, D.B.C road, 3 no Ghoomti and 4 no. Ghoomti crossing, Beguntary, Dinbazar More causing problems to the commuter. It is found during field survey that about 7500 to 8000 rickshaws play with in the town, among this only 4500 are registered. So, this huge number of unauthorized rickshaw and increasing number of two wheelers aggravate traffic congestion in the town. A long queue of van pullars in and around C.B.D also hindered the movement in the peak hours.

5.5.7 Absence of Parking space

One of the major problems being faced today is shortage of parking space. There is absence of proper parking space in and around C.B.D and at the main business thoroughfare, front of school, nursing homes etc. The roadside is used for parking. Haphazard parking of vehicles in front at shops obstructed the easy flow of customers during peak hours.

5.5.8 Tele Communication

Effective communication facilities can promote socio-economic development of any place. Advanced telecommunication network is crucial for urban living. At present there are 2 telephone exchange in the town. One is located in ward 8 and another is in Danga Para (ward 14). The number of connection has increased from 2627 in 1996 to 7443 in 1999 – 2000. Despite the increase in the number of connections the pending or waitlisted number also increased. This is due to the rapid growth of population and functional complexity and improved level of living. The connectable capacity is 9656, out of which 9462 lines are working. So, the provision of new lines should be increased in a short period

There are altogether 254 Public Call Booths (P.C.O) which are unevenly distributed in the town. 25 P.C.O booths are available for 10,000 persons in the town.

Table 5.17 FACILITY OF P.C.O BOOTH IN THE TOWN

Facility of P.C.O	No. of P.C.O	No. of Wards	% of Wards
Very low	1-5	9	36
Low	5-10	5	20
Moderate	10-15	5	20
High	>15	6	24
Total	254	25	100

Source:- Telecom Dept.

Number of P.C.O booths is very low (1-5 booth/Ward) in 36% of the wards, those are located at the fringe area of the town. These wards are large in area, but the number of booths is very few in each ward, so the facility is not easily accessible to the residents of each part of these wards. A moderate number (10-15 booth/ward) of public call booths is found in only three wards which is shared by 20% of the total wards of the municipality. These wards are located around C.B.D. the highest number (>15 booth/ward) of P.C.O is found in C.B.D and along the main through fares such as Kadamtala, D.B.C road, Jalpaiguri – Haldibari road etc. About 20% of these booths have fax facility.

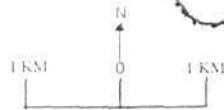
Field survey reveals that about 40% population of the town use cellular phones for business purpose on for personal use. Despite the revelation in communication technology with the introduction of inter-net, website, E-mail the telephones including cellular, postal and telegraphic communication will remain as most basic use on the urban population.




88°43' E

ACCESSIBILITY OF POST OFFICE

26°32' N

26°32' N



	Low	25,000 Population / P.O
	Moderate	7,000 - 8,000 Population / P.O
	High	3,500 - 4,500 Population / P.O

88°43' E

Fig - 5.14

5.5.9 Postal Communication

At present total number of post offices are 16, instead of 9 in 1971. Among these, Head Post Office is situated in Ward 8. The command population for each post office is 6,690. It is found that about 52% wards have sub post office facility. But the people of remaining 48% wards are not getting the easy accessibility of postal service. Accessibility is low in 28% wards & high in 36% wards.

Table 5.18 ACCESSIBILITY OF POST OFFICE

Accessibility	Population/P.O	Zone	% of Wards
Low	25,000	IV [Western, North Western]	28
Moderate	7,000-8,000	II, III [S. Western, South, S. Eastern]	36
High	3,500-4,500	I, V [North, Eastern, Eastern, Central]	36
	6690	The whole town	100

Source:- Postal Dept. & Field Survey

It is evident from Table 5.19 that, Zone IV has only 1 post office, instead of having the highest percentage (25%) of population of the town. So, it can be said that postal service is less accessible for the people of Zone IV. It is also found that postal facility is easily accessible for the people of Central and Eastern parts which accounted for 3903 population / Post Office, and 4358 population / Post Office respectively. As C.B.D. of the town is situated in the central part and administrative area is situated in Eastern part, so the situation is little bit better than the other parts of the town. Total southern, southeastern, and southwestern part are getting moderate accessibility of postal service.

Table 5.19 ZONE WISE DISTRIBUTION OF POPULATION/ POST OFFICE

Zone	No. of P.O	Population/ P.O	% of population
I North-Eastern, Eastern	4	4,358	17
II South-Eastern	2	7,169	14
III South & South-Eastern	3	7,982	24
IV North-Western & Western	1	113	25
V Central	51	3,903	19
	15		100

hThe postal service operates twice a day at 9 am. in morning and 4-30 p.m. at afternoon. At present about 20 private courier services are working in several parts of the town such as First Flight, DTDC, Eastern-Express, skyline etc. only 2 courier office is available for per 10,000 population in the town, which is not sufficient field Survey reveal that about 800 population/day use courier service facility in Jalpaiguri town. Total courier service sector of the town deliver 5 Quintal (Approx) parcel and 3500-4000 documents per day. But this facility is restricted with in the C.B.D (Dinbazar, D.B.C road, Merchant Road) and main through fare of the town. Due to several infrastructural problem courier service sector cannot develop in each and every part of the municipality.

Field Survey reveals that the number of P.C.O Booth is high in central business area of the town, which is necessary for business activities and the avg. distance between the booths increases towards the fringe with less number of P.C.O booths, So, it can be said that the central part is much developed than the other parts of the town.

5.6 HOUSING AND LIVING CONDITION OF THE PEOPLE

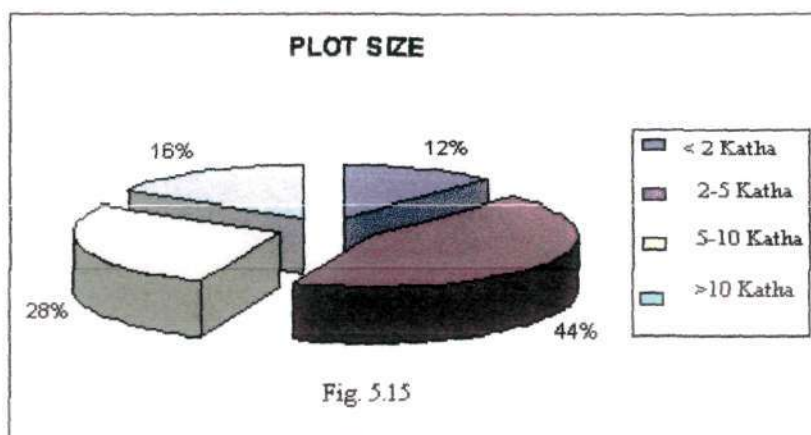
Housing units form a major spatial phenomenon, as it is one of the basic needs of human beings. Housing is a basic amenity for civilized life. It provides security and minimum civic facilities and privacy to the human beings for decent living (Saha. Faride and Jaiswal Rashmi, 2002). The housing demand of a region depends on its economic and demographic structure, its level of infrastructure at development and the place of urban expansion (Basak. C.M, 2003). Plot size and housing condition have a significant impact on the social and economic life³ of the town, and also have a relation with environment of the town.

5.6.1 Plot Size

At present out of 22063 households are occupied by residential houses. About 2% households are used as residential-cum- commercial centers and rest 1% is used as commercial units.

Table 5.20 PLOT SIZE

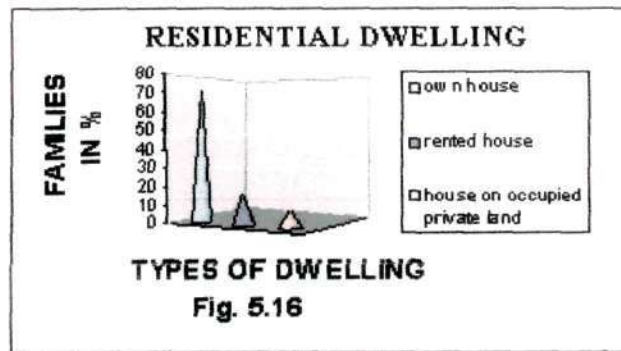
Plot Size in <i>Katha</i>	Category	% of Wards
<2	Low	12
2-5	Medium	44
5-10	High	28
>10	Very high	16



Field survey reveals that 12% of the plots are of small size (<than 2 *Kathas*), 44% are of medium size (2-5 *Kathas*), 28% are of large size (5-10 *Kathas*) and 16% plots are of very large size (> than 10 *Kathas*). It is also found that plot size is small in C.B.D as population density and demand of land is also high. Plot size is very small in slum areas, which are scatteredly located in the town. Medium size of plots are found in residential areas like Natun Para, Congress Para, Mahanta Para, Ukil Para, Santi Para etc which are occupied by middle income group people. The percentage medium size plot (2-5 *Kathas*) increases during last decade due to fragmentation of holdings in residential areas. The size of plots usually increases towards the fringe area, where land value and demand of land is less than C.B.D or residential zones. Several government housing, residence of Administrative officers and administrative sectors are located in Ward 3 & 8, which is reserved for very large size plot. Fig. 5.15 shows the ward wise distribution of different plot size in the town

5.6.2 Residential dwelling

Field survey reveal that out of 200 surveyed family 72% (144 out of 200 family) is living in their own houses, 18% living in rented houses and rest 10% is living an occupy public land (Fig. 5.16) Regarding the land ownership 70% families who have own houses are self owners of the land and 30% are joint owners of land. It is also found that >80% families are living in the town for more than 30 years, 4-5% are living for 10-30 years and 5.5% family are living since last 10 years. The early dwellers are mostly living on the left bank of river Karla. The people who came from undivided Bengal are occupying the Prime location of the town.



5.6.3 Nature of houses

At present the overall nature of roof of the houses in Jalpaiguri town is Kuncha (59%). But excluding the slum houses the percentage increases up to 81. So, it can be said that, existence of slum houses in the town highly influence the character of roofs. The situation is also identical in the case of wall of the houses. Excluding the slum houses 90% houses have pucca wall, where as including slum houses the percentage decrease to 54% during field survey Kuncha roofs are identified in Most of the wards located at the fringe area, which also have a large number of slum houses. The condition is worse in North-eastern part (Ward 2,3) of the town where about 70% roof is kuncha. Only Wards 4,8, 17, 18 and 19 have higher percentage (>60%) of pucca roof. Majority of houses have pucca walls in all wards except the wards situated at the north-Western part such as Arabindra Nagar, Mujib Gar colony etc. A better situation is observed in Dinbazar. Merchant Road, Ukil para, New Circular Road (Ward 4, 5, 18), where more than 75% houses have pucca wall. It is also observed that >80% floor is pucca in the wards those are located in and around C.B.D and in main residential area of the town. Multistoried residential houses are the new addition to the urban fabric of the town. These are less in number & mostly concentrate in C.B.D & residential areas.

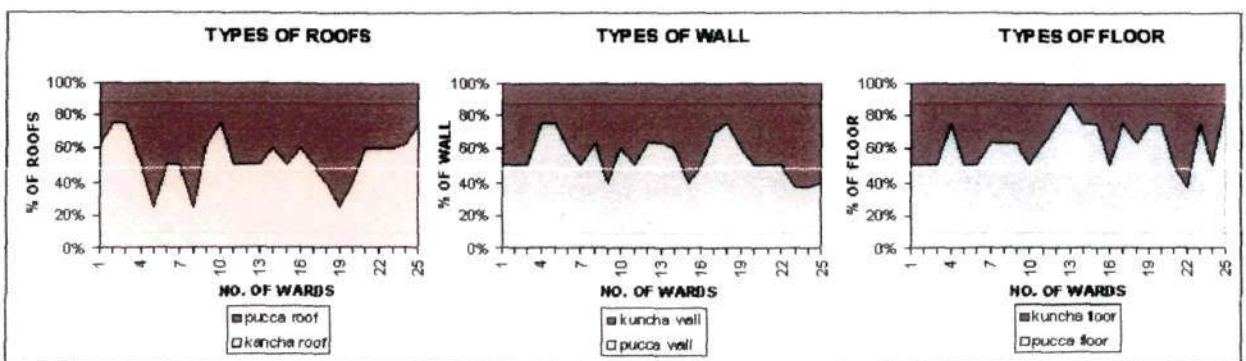


Fig. 5.17



Plate- 4 A View Of Residential Area

5.6.4 Monthly Income

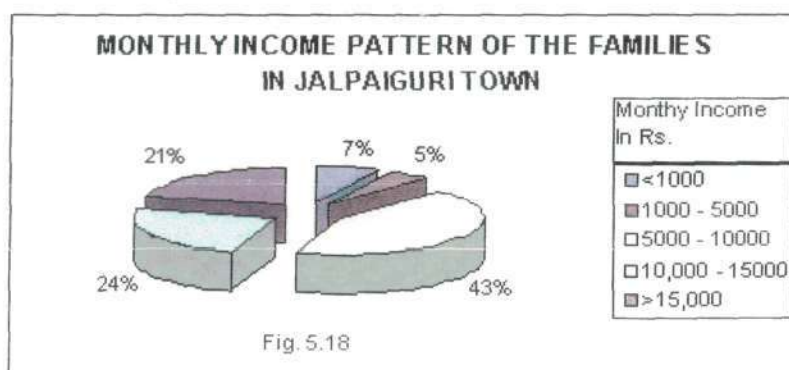
Field survey represent a comparative analysis regarding the monthly income pattern of each families for meaning full understanding of their quality of life (Table 5.21)

Table 5.21 MONTHLY INCOME PATTERN OF THE FAMILIES IN JALPAIGURI TOWN

Monthly Income in Rs.	Families in Percentage
<1000	7
1000 - 5000	5
5000 - 10000	43
10,000 - 15000	24
>15,000	21

Source:- Field Survey

The highest percentage (43%) of the total surveyed families has a monthly income of Rs. 5,000-10,000. These families have 1 or 2 earning members and mainly engaged in service. About 21% families have monthly income above Rs. 15,000. These are mainly business families or the families those have more than 2 earning members. The lowest income (Rs.<than 1,000) is recorded among the slum people which is shared by 7% of the total families.



There is a prominent relationship between the monthly income of a family and the kind of amenities they used. So, the data have been collected on the basis of several amenities or luxurious items used by each family. Table 5.22 represents the percentage of families having amenities at least one type.

Table 5.22 PERCENTAGE OF FAMILIES HAVING AMENITIES AT LEAST 1 TYPE.

Amenities	Families in %	Personal Vehicles/Mode of Transport	Families in %
Electricity Connection	93	Cycle	84
Television Set	81	Byke or Scooter	51
Refrigeration	47	Car	11
Telephone/Cell phone	64	Bus or Truck	4
Washing Machine	10	Rickshaw	6
Computer	7	Van	2
Daily News Paper	31		
L.P.G as cooking fuel	26		

Source:- Distribution of India, Field Survey

It is found that about 93% families have electricity facility. Among the 200 surveyed families 81 have Television set, 47% have Refregerator, and 10% families have Washing Machine. The lowest Percentage (7%) families have computer for educational or business purpose. About 64% families in the town have the landphone or Cellphone facilities. The total consumer of newspaper in Jalpaiguri town is 30800 which is 31% of the total population of the town. Among this 85% people is the consumer of Bengali Newspaper such as Uttarbanga Sambad, Ananda Bazar Etc, 10% people in consumers of English newspaper (Telegraph, Statesman etc.) and only 5 % people is the consumers of Hindi newspaper. The customers are mostly medium to high income holders. It is also found that about 84% families have cycle and 51% families have two wheelers (eigher scooter or Byke) for their personal use. Although Rickshaw is the main mode of Transport of the town only 6% families have Rickshaw for business purpose. Considering the amenity and mode of transport in each family, it can be said that Television set, Cellphone, Cycle and Twowheelers are very common to the people of the town. People of higher income group have more than one amenities and two whellers or car for personal use and have bus or Truck for business purpose. Rickshaw or Van owners are mainly from middle income fgoup. An interesting information has been noticed during field survey, that almost all slum families have

no electricity facility in their houses, but some of them have battery connected Television set and radio. Cellphone is not rare in case of one or two families now a days.

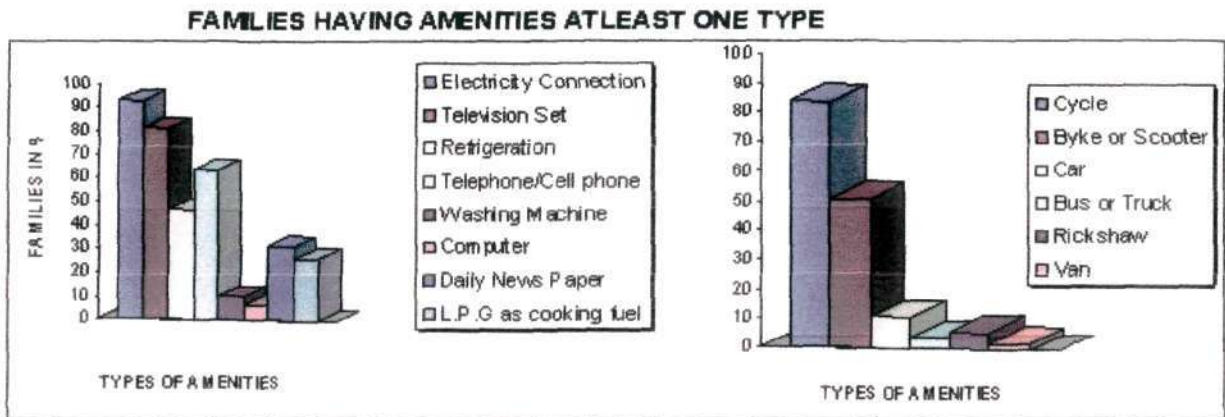
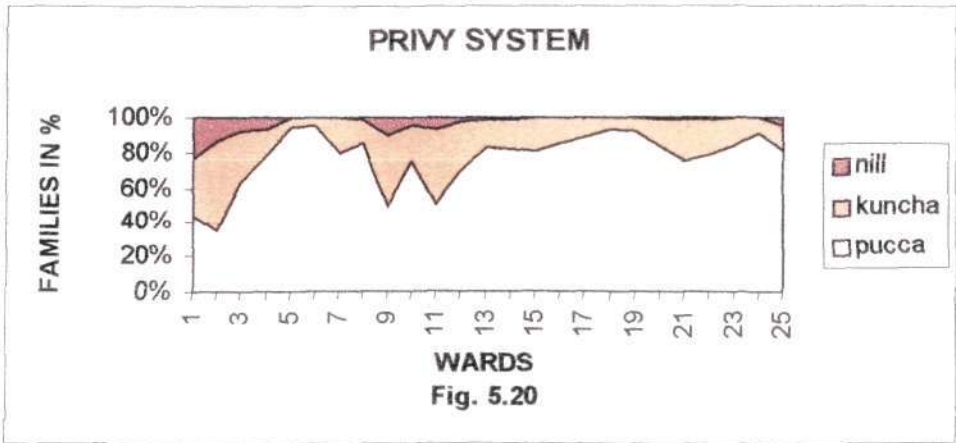


Fig. 5.19

5.6.5 Other Facilities

5.6.5.i Privy

About 81% of the total household (17800 out of 22063 household) have sanitary latrines (during 2005-2006) in the town. Rest 4263 houses either have *kuncha* or low cost latrines (13%), and about 6% households have no lavatory facility at all. During field survey houses without privy arrangement are found at the north eastern (Ward 1,2,3), Southeastern (ward 9 & 10) and north – Western (Ward 20, 21 & 22) fringe and in the slum areas of the town (Fig. 5.20) about 17% (34out of 200 surveyed family) of the family shared toilet with their neighbors. About 77% families have their own private latrines either *pucca* or *kuncha*. In the slum area 10% houses have separate bathroom facility where as excluding slum houses 98% houses of the town has separate bathroom facility. Field survey reveals than 91% of the bathroom is *pucca* and only 9% is *kuncha*.



5.6.5.ii Electricity

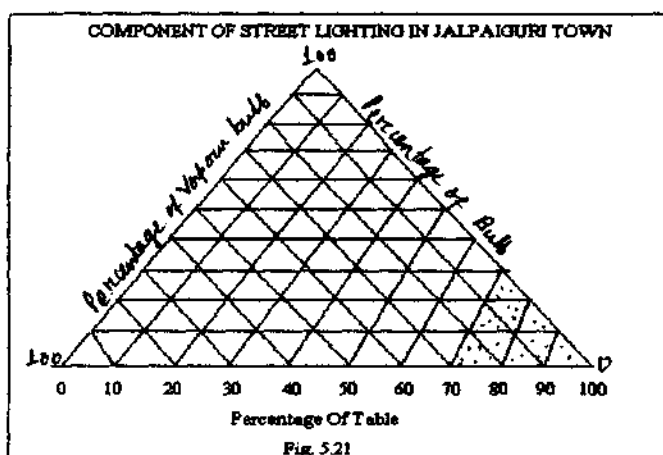
Jalpaiguri town receive power from Mohitnagar substation, which is connected to Siliguri power Station by 33 KV lines. The demand of electricity goes upto 2029 K.W at daytime and 3500 KW in the evening during summer season. The daily supply of electricity is of 1000 K.W, which is quite insufficient. At present the total number of consumers in the town is 34.500. a gradual progress is noticed in the number of streetlights, which shows the number was 652 in 1971 and 5805 in 2005. The ward wise distribution of street lights shows that 32% of the total wards have <than 200 street lights. About 52% and 16% wards have 200-300 and more than 300 streetlights respectively (table 5.23). it can be said that beside having small area the wards in C.B.D required more streetlights. The main through fares and residential zones have moderate number of lights (200-300), which is found inadequate.

Table 5.23 **WARDWISE DISTRIBUTION & STREET LIGHTS**

No. of Street Lights	No. of Wards	% of Wards
<200	8	32
200-300	13	52
>300	4	16
	25	100

Source:- Municipal Authority & Field Survey

The highest number of Streetlights is recorded in Ward I and lowest is recorded in Ward 16. It is also found that among the total streetlights of the town 71% is Tube lights, 19% and 10% are shared by Bulbs and Vapour lights respectively. Ward wise distribution of streetlights shows that the number of tube light is high in C.B.D and along the major through fares of the town. Where as number of bulb is very low in the C.B.D. Normally bulbs are used as streetlights in the words located at the fringe area of the town. Vapur bulbs are found at the junction of lanes and roads. Fig. 5.21 shows the dominance of tubes in street lighting in the town. As the number of industrial units is less in Jalpaiguri town and all of these are small-scale industries, so the demand for electricity in industrial sector is less than domestic sector. Some of the lanes of by lanes at the fringe area are still in darkness. As the supply of electricity is inadequate the town suffers from low voltage and regular power cut.



5.6.5.iii *Drinking Water Supply*

Water is one of the three basic needs of man. The provision of safe and adequate water supply for the ever-increasing population is a basic necessity for the healthy living of the urban community. In urban areas the timely and regulated supply of water is considered necessary (R. B. Mondal). Wells were the main sources of water supply in the early days, which were found inadequate as the population of the city, grow. The municipal water supply system was introduced in 1934 for the first time in Jalpaiguri town, which includes 3 deep tube wells with total yield of 2 Lakh gallon/day. The PHE system introduced in 1979, which includes 6 deep tube wells with total yield of 4 lakh gallons/day. Later the Public Health Engineering Department (P.H.E) constructed pumping Station and 3 overhead tanks with capacity of 1 lakh gallon each. The distribution of water is done mostly through 564 roadside stand posts.

Before 2001 municipal authority as well as the public Health Engineering Department run two separate water supply system in Jalpaiguri town. But at present the total water supply system. In undertaken by the municipal board. During the last 20 years the number of overhead tank increased from 9 to 12, with an increasing supply capacity from 4 lakh gallon/day in 1981 to 8 lakh gallon/day in 2001. The municipality also provided house connections. The number of house connections also increased from 600 in 1989 to 3692 in 2004. The per capita consumption of water was 24.5 lt. In 1981 which increased up to 33 lt./capita in 1991. But after that the per head consumption of water decreased to 30.1 lt./capital in 2001. The population growth of Jalpaiguri town in 1971-81 and 1981-91 decades was very sluggish. Initially there was a balance

between supply and demand. But during 1991-2001 decade as the population increased rapidly, the water supply failed to fulfill the demand of the people living in the town.

Table 5.24 SUPPLY AND CONSUMPTION OF DRINKING WATER IN JALPAIGURI TOWN

Year	Supply/day in Lakh gallon	Per capita Consumption (in Lt.	No. of Overhead Tank	No. of House connection	No. of Road side stand Post
1981	4	24.5	5	<600	400
1991	6	33.0	9	600	564
2001	8	30.1	12	3692	666

In average 75% houses in Jalpaiguri have water supply facility for drinking purpose, 20% have only well and 5% have tube wells. According to field survey most of the houses have well with in their premises. Field survey reveals that people use well water for washing and cleaning purposes. It is also found that about 3% households have installed pumps in their houses for water requirement. Apart from this 666 water taps are installed by the municipality for general use on various roadsides in the town. Table 5.25 shows the ward wise distribution of stand post in Jalpaiguri town.

Table 5.25 WARD WISE DISTRIBUTION OF WATER STAND POST IN JALPAIGURI TOWN.

No. of Water Stand Post	Category	No. of Wards	Words in Percentage
<25	Low	9	36
25 - 30	Moderate	10	40
>30	High	6	24

The highest number of water stand post (37) is found in Netaji Para, Shanti Para etc. (Ward 25), and the lowest number of Stand Post (19) is found in Hakimpara, Senpara (Ward no. 3) area, Fig. 5.22 shows the distribution of pipe lines and the location of water stand post in the town. The present supply is limited 4 hours twice a day which partly meet the demand by drinking water in the town. The study reveals that maximum people of the slum (90%) use piped water supply from near by public stand post for drinking purpose. But for other uses they use kuncha well water, which is very few in number.

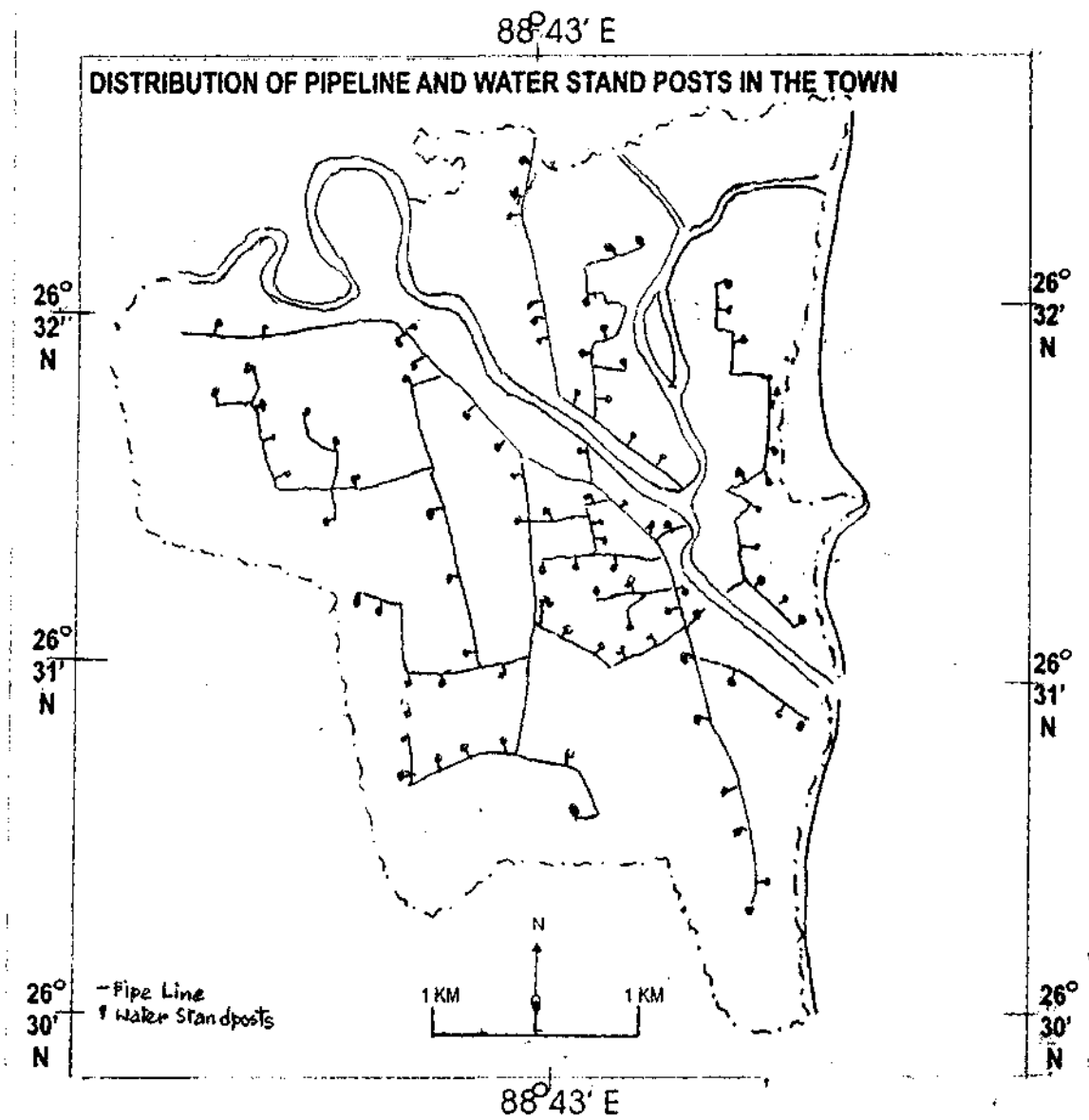


Fig - 5.22

WATER-SUPPLY ZONE

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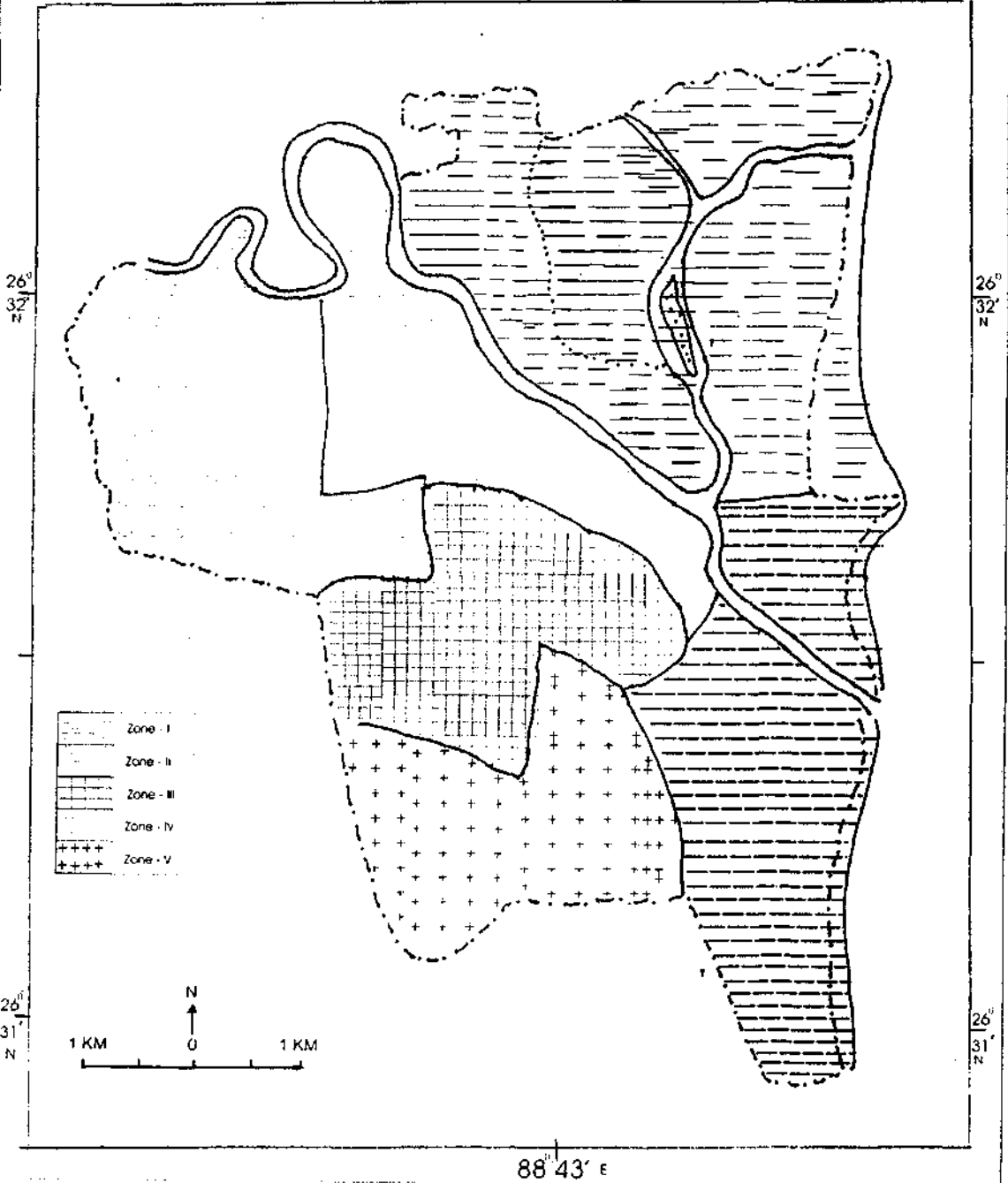


Fig - 5.23

The water supply system of Jalpaiguri municipality has divided the town into five water supply zones (Fig 5.23). The highest population (32133 persons) is found in Zone IV, which consists of 2 overhead tanks, with a capacity of 1.5 lakh & 1.7 lakh gallon and 279 stand post on road side. The 2nd highest population (20303 persons) is found in Zone III, where water supply works through 4 tanks and 145 water stand posts situated within this Zone. The lowest population is found in Zone I, which consists of 2 tanks and only 61 stand post. But the water supply is quite inadequate in this Zone. Zone V has not a single overhead tank and they get water supplied by Zone, through 102 water stand post. The daily consumption pattern of these 5 Zones indicate that water supply is a little bit inadequate in Zone IV and all most sufficient in Zone III & II

Considering the extent of growth of population among all the parts of the town, short of the needs. The constructing of new houses in the recent years in Panda Para, Bamunpara, Arabindra Nagar etc. again but the water supply position is a little bit difficult. The average static level of ground water in Jalpaiguri town is 3.648 metre. According to municipal authority 'chlorination process' is used for purification of surface water stored in the overhead tanks.



Plate – 5 Reservoir And Water Stand Post

5.6.5.iv *Cooking Fuel*

Living standard is corrected with energy consumption. The cooking energy use in Jalpaiguri town is dominated by L.P.G, kerosene and firewood. At present there are 3 L.P.G distribution centers in the municipality giving service to 26,000 consumers. The highest percentage (>65%) of households using L.P.G is recorded in the wards located in the residential Zones of the town marked by pure urban economy and higher income level. Contrary to this the highest percentage (20%) use of firewood is found in the wards located in the slum areas of the town marked by low level of literacy and low income group. It is observed that fumes produced by this fuel spread over small norms and harm the health of the infants. So, it can be said that in slums non- commercial energy constitute the bulk of energy supply.

5.6.5.v *Sewerage system:-*

A proper provision of drainage and sewerage system is essential for a healthy urban environment. The sewerage system of the town is open channel system and of old type. Besides having a large area of 12.94 km², only 26 km long drain is pucca and 213 km long drain is kuncha. Field study reveals that among the wards only two (Ward 3 and 8) have highest percentage (>20%) of pucca drains. This is due to the fact that Municipal office, District Magistrate Office and other Office, Residence of administrative officers are concentrate in these wards. So, the condition is little better. The condition is poor in the words located at the fringe area and in the main residential areas of the town. A moderate (15-20% Pucca) percentage of pucca drain is found in C.B.D area. In general 57% houses of the town have (Pucca) sewerage system, where as 23% have kuncha and 20% have no sewerage system in the house. Most of the slum houses in Kustha ashram (Ward 3), and Pilkhana (Ward 9) have no sewerage system. Where as other slum houses in the central or northern part have kuncha sewerage system. As a whole the sewerage system of Jalpaiguri town is very poor in nature.

5.6.5.vi *Dumping Garbage:-*

The total refuse materials collected from Jalpaiguri town is 30-35 metric tones per day, which include garbage, rubbish, construction wastes dead animals etc.

Types and Generation of Solid waste

The amount of solid waste disposal permonth is 1050-2000 metric tones, including 1990.5 metric tones of garbage and rubbish, 8.5 metric tones of construction wastes and 10-12 dead animals. It is found that the highest quantity of solid waste in generated in the C.B.D area, which is followed by the densely populated residential areas. Field survey reveals that rags, plastics, food wastes are generated from house. Hotels and commercial institutions and construction wastes are generated from constriction sites of domestic and commercial section of the town. A large amount of hazardous medical wastes from Sadar Hospital (Ward I) are thrown to river Karala.

Types and generation of Liquid Waste

Liquid Waste disposal are mainly associated with septic tank disposal and sewage disposal. About 12,000 lt. Septic tank sludge are removed by Septic Tank cleaner in every months. The household waste-water are removed by drains to river system of the town or in the paddy fields at the west.

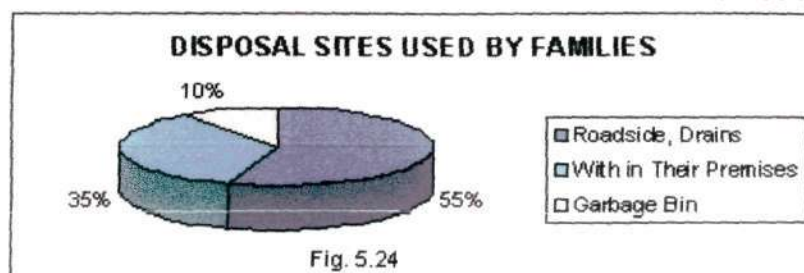
Collection and Disposal

Field survey reveal that about 55% families disposed off their domestic refuse at the road side or drains (Table 5.26) Majority of houses in C.B.D area use road haphazardly for dumping due to absence of proper dustbins. In the fringe area where plot sizes are large people (35% of the total family) dump the garbage with in their premises. And only 10% of the families use proper garbage bins.

Table 5.26 DISPOSAL SITES USED BY FAMILIES

Disposal Sites	Families in Percentage
Roadside, Drains	55
With in Their Premises	35
Garbage Bin	10

Source Field Survey



Jalpaiguri town still enjoy the old method of waste disposal that is 'Sanitary Land filling' method. Waste materials those are collected from the town is dumped in a low lying area situated in Punga Fakira Para with an area of 5.64 sq. miles, and 9 km apart from the town. 20 scavenger are engaged in Septic Tank cleanse with 2 Septic Tank cleaner which have a capacity of 3000 lt./ Tank. They also collected garbage from bins in each ward and removed by trucks to the dumping ground. But the inefficiency to collect waste regularly is the main cause of in sanitary conditions and disease in the town.

5.7 RECREATIONAL PLACES

Recreation has a major role in burning up energy in human life. It play as a out let for relieving stress., which is required in present day complex urban life. Public open spaces have often been urban life. Public open spaces have offer been called the 'lungs' of cities (Mondal. R.B. 2000). Recreational places like open spaces or parks, clubs, libraries, cinema hall etc. have a role in social life of the town dwellers.

5.7.1 Open Space

At present due to huge construction of residential houses, open spaces, play grounds were vanished from the urban fabrics of the town. There are 3 parks in the town located at the bank of River Karala Jubilee Park, Tista Uddyan (ward 3) are situated at the left bank of Karala, which are the only recreational places of the town dwellers. Tista Uddyan with a glass house, nursery and boating facility, is the main attraction of the town. Children's Park is situated at the right bank of river Karala. Although the town requires 5 parks for every 10,000 population, which is far from the reality. All these parks are concentrate at the extreme eastern part of the town, which is inaccessible for the residents.



Plate – 6 A View Of Tista Uddyan

5.7.2 Clubs And Playgrounds

About 23 sports clubs are scatteredly situated in the town. The Jalpaiguri Town Club stadium is the main centre for sports meets since last 50 years. But this is situated at the extreme east and infrastructure is not computable. To cope up the growing demand of stadium and play ground, Jalpaiguri sports Complex was established in 1995 in Raikat Para (Ward I) J.Y.C.C., Dishari, Sanghasree, A.B.P.C. Raikat Para Sporting Club etc. are the major clubs, those have their own play ground in the town and have several welfare activities. A welfare centre for spastic children is located in the front of P.D.Women's College (ward 8).

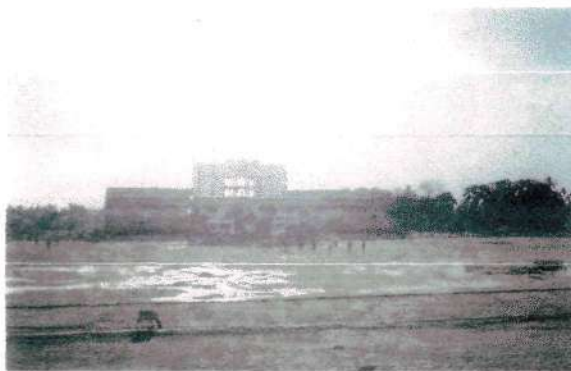


Plate – 7 A View Of Jalpaiguri Sports Complex

5.7.3 Libraries

Jalpaiguri town has sufficient number of libraries. Out of 15 Libraries 13 are government sponsored, and 2 are non-sponsored libraries. Jalpaiguri District Library with a maximum number of members (3762 members) is situated in the eastern part (ward 9) of the town. Almost 60% wards except the wards of northern part and C.B.D. has library facility. Another important library of the town is Azad Hind Library located near Kadamtala (Ward 17) with 450 members and average 50 readers per day. The membership of students is maximum in District library and Azad Hind Library due to huge collection of reference books, magazines and newspapers. Small libraries such as Babupara Pathagar, Pratap Sangha Pathagar, Milan Sangha Pathagar etc. serve their own localities. Mahila Pathagar, the only 1 library for women is located at Ukil Para (ward 18).

5.7.4 Auditorium And Cinema Halls

There are 4 public auditoriums such as (Arya Natya Bhaban) Rabindra Bhaban, Jalpaiguri Art Complex etc. and 3 cinema halls such as Rupmaya, Dipti Talkies, Sri Dayal cinema Hall. Among these two cinema halls and one auditorium are concentrated at Kadamtala, the heart of

the town and except Sri Dayal Cinema Hall rest are concentrate at the eastern part of the town. So, it can be said that the western and northern part are lacking of these facilities and the existing recreational places are less accessible for the people of these part of the town.



Plate – 8 Modern Auditorium : Sarojendra Deb Raikat Kalakendra

5.7.5 Other Places

5.7.5.i Crematorium

There is only one burning ghat, situated on the right bank of Karala at Mashkalaibari, for Hindus, and Burial ground (for Muslims) is situated near this burning ghat.

5.7.5.ii Temple

There are a number of old and new temples located almost in every part of the town. Among the Yogmaya Kalibari, Madan Mohan Mandir are located at Telipara, Shani Mandir at D.B.C Road, Kali Mandir at Dinbazar, Panda Para, Hanuman Mandir at Mashkalaibari, and sat Shangha Bihar near Boilkhana Bazar are very popular. The historical temple of Devi Chowdhurani is located at the outer part of northern boundary of the town.

5.7.5.iii Church

There are 2 Churchs situated with in the municipal boundary. Among these the Baptist Church is located in Race Course (ward 8) and another is located near old Court (ward 3).

5.7.5.iv Mosque

Mosques are scatteredly found in the town. Among these Masjid Situated in Nayabasti (ward 8), 4 no Ghoomti (ward no 15), Dinbazar (4 & 6), are very popular. Others are found in Pilkhana (ward no 9) Muhuri Para (ward 24) etc.

CONCLUSION

The study reveals that due to excessive rural urban migration, and natural growth of population, the socio-economic facilities promoted by municipality come insufficient now a day. As a whole the level of educational facility is good, but schools are unevenly distributed in the town. In respect of students in Higher Secondary and College Level the institutions are found inadequate. Play ground and other infrastructural facilities are poor in some of the schools. The importance of drinking water and sanitary facility in primary schools is not given. It is found that medical facility is insufficient and inaccessible for a large number of people. As a result several private nursing homes are mushrooming in the town. Some of the communicable diseases affected the whole town, specially the slum pockets of the town. Respiratory disease is a crucial health problem of the damp environment of the town. The unhygienic, unsanitary living conditions of slum people are the main cause of their suffering from contagious diseases.

Non-specialized retail markets characterize the business structure of Jalpaiguri town. The tea trade based economy of the town was expanded at the end of the last century and the town becomes the wholesale center of North Bengal. A few small-scale industries have been set up in the town but the infrastructural facilities are very poor which is very discouraging. Several nationalized banks along with a number of financial institutions are present to meet the need of commerce and industries in the town. But except C.B.D. area, banking service is not easily accessible for a large number of people living at the fringe area of the town.

From over all observation it can be said that Jalpaiguri town attracts more people from each and every part of the district, which become easily accessible for them due to proper road network and improved connectivity by bus services. So, the road network plays a key role in boosting growth of Jalpaiguri town. But except a few arterial roads most lanes and by lanes are very narrow and serpentine causing great hindrance to smooth traffic flow within the town. Rickshaw is the main public transport within the town, because Jalpaiguri lacks any other modern mass transport system. Bad road condition, water logging problem during rainy season and absence of proper parking space, inadequate shades for passengers create problems for commuters in the town., The availability of communication facility is high in central business area, which is necessary for business activities of the town. The accessibility of Post Office is low

and population per post office is high at the fringe area, which indicate a few people have to connect to the outside by the municipality and literacy level is lower than the central part of the town. So, it can be said that fringe area is less developed.

At present there is a shortage of houses and scarcity of lands with in the municipal area specially around C.B.D, and much of the available accommodation in the slum area is qualitatively of substandard type. Multistoried residential houses become popular due to the shortage of residential space, high occupancy rate, high house rent and ever increasing population in the town. The study reveal that the income differential gap between slum people and the rest of the residents of the town is very prominent, which is reflected throughout their living condition. While 81% of the households have sanitary latrines rests have kuncha or low cost lavatory facility. The sewerage system of the town is very poor in nature. There is no systematic sewerage system exist in the slum area, as a result waste water drains either at the front or lack of the houses. The over all water lay out system of the town is unsatisfactory. Power supply is insufficient in the town under study. Regular include of load shading at the evening caused problem for students, and pedestrians. The water supply fell a little short of the needs in a particular area of the municipality. Water crisis is not found during dry season, as the variation of water level is quite negligible. It is found during field survey that purification of water irregular. As the water is dysentery prone, the irregular clorinization aggravates the situation, which reflects in the disease pattern of the residents. Broken taps and stand posts are the evidence of the poor maintenance and inefficiency of the municipal authority.

It is found that due to the absence of proper garbage bin and inefficiency in service delivery, garbage are dumped on roadside or drains, which caused environmental problems open space, playgrounds are decreasing day by day. So, open spaces along with recreational places are required for the residents with in easy reach of all.

The study reveals that the living standard as well as the environment of the town is not up to the mark. The socio-economic facilities e.g. education, health, trade, meet the need of the residents, but is found insufficient for further development.

CHAPTER VI

SOCIO-ECONOMIC FUNCTIONS AND THEIR GAPS IN THE TOWN

INTRODUCTION

The socio-economic scenario of Jalpaiguri town reveals that the socio-economic & other infrastructural facilities are not sufficient to the present demand and further development. So, it is essential to determine the functional and spatial gaps in the town to formulate future planning for balance development.

6.1 METHODOLOGY

The regression equations ($Y_c = a + bx$) has been done for each function and with the help of these equations expected functional scores (E) have been calculated in respect to observed scores (O). The difference between observed(O) and expected(E) values represent the functional gaps in each ward. To determine the level of functional gaps in the ward, these values (O-E) have been grouped in to broad categories like low, moderate, high in both positive and negative values. These functional groups are also useful for selecting future functions in appropriate places of desire level. The scattered diagram of each function shows the relationship, which is either positive or negative.

It is found that high positive relationship exist in the case of literacy, job opportunities in tertiary sectors etc, where as primary and secondary sectors and other functions reveal poor relationships.

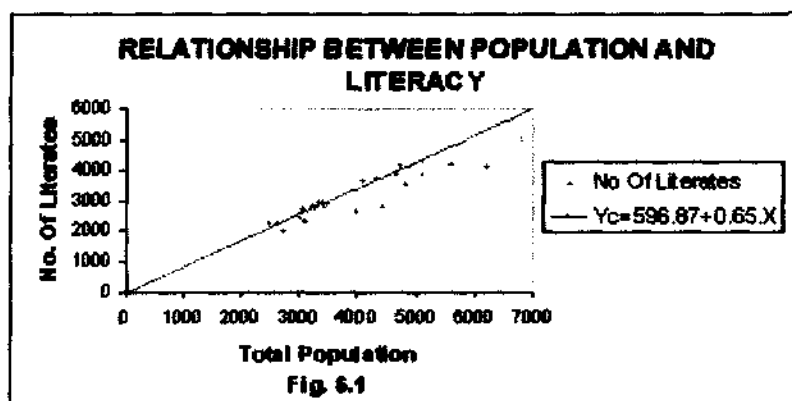
Like the other towns the level of functions grow with the demand of it's residents, but the number of functions and their level fluctuate from ward to ward. This is because, the relationship between the utilization capacity of the residents of each ward and the demand of several amenities are neglected in this unplanned town. The uneven distribution and haphazard growth of functions create spatial and functional gaps in the town. Due to un-availability of data, it is not possible to represent the level of some functions mathematically.

6.2 FUNCTIONAL GAP

6.2.1 Functional Gap In Literacy

Table-6.1 RELATIONSHIP BETWEEN POPULATION AND LITERACY

Category	No of Literates	Wards (+)	No of Wards	Wards (-)	No of Wards
Low	<100	15,17,18,20,21	5	3,16,23	3
Moderate	100 - 300	6,8,13,14	4	5, 7,25	3
High	300 - 600	10,11,19,24	4	4,9,22	3
Very High	>600	1,2	2	12	1
Total In %			60%		40%



The diagram (Fig-6.1) shows a good positive relationship between the population and total literates in the town. The statistical analysis and diagram reveal that, out of 25 wards 40% have less number of literates than expected and 60% wards have more literates than the expected. Negative relationship reveals that the situation is not good in C.B.D.(ward-no 4,5,7) and peripheral wards(wards no-9,22,23&25) those are shared by only 37% of the total educational institutions. Lack of awareness about education among the slum people resided in these wards and poor economic condition of the people are the reasons of low literacy. The number of literates is negatively very high in ward no12, which consists of the major slum area (harijan basti) of the town. So, the situation is worst in this ward.

The existing number of literates is much high than required in central and southern part, where most people are economically capable to send their children to school. This trend may be the cause of an increase in number of literates mainly in primary level.

6.2.2. Functional Gap In Education

6.2.2.i Functional Gap In Educational Institution

For the identification of functional gap in educational institutions score has been applied to represent the level of institutions from primary to college levels. About 32% (8 out of 25) wards are of very low level and 24% (6 out of 25) are of low level are scattered over the central, north-western and southern part those are residential in nature. Among the wards 5 have all types of institutions from primary to college level, where educational facility is very high and these wards are scatteredly situated in north-eastern, south-eastern, and north-western fringe of the town and near C.B.D. The region of high educational facility is concentrated in two neighbouring wards (ward no18 and 24), which is shared by 8% of the total wards.

Table-6.2 FUNCTIONAL GAP IN EDUCATIONAL INSTITUTION

Category	Educational Score	Wards	No of Wards	% of wards
Very Low	<5	4,10,13,15,16,19,22,23,	8	32
Low	5 – 10	2,7,11,17,20,25	6	24
Moderate	10 – 15	3,6,12,14,24	5	20
High	15 – 20	18,	1	4
Very High	>20	1,5,8,9,21	5	20
			25	100

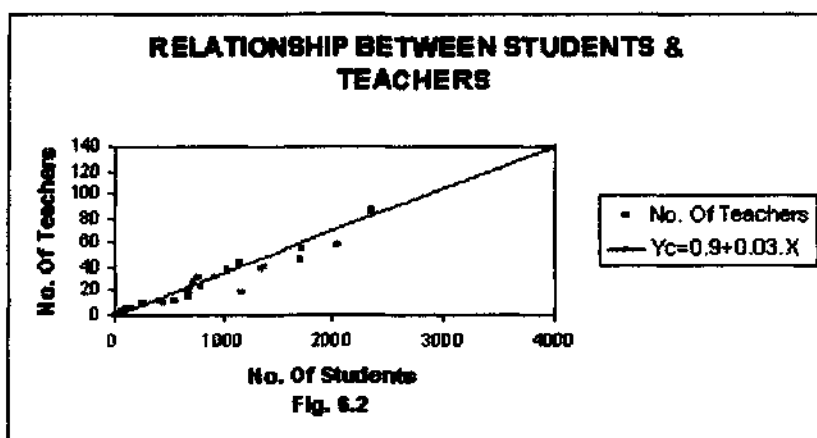
6.2.2.ii Functional Gap Between Students And Teacher

The scattered diagram shows poor positive relationship between students and teachers (Fig-6.2). The statistical analysis and the diagram depict that, the condition is equilibrium in wards like 8,22,23,25, which is shared by 16% of the total wards, as the existing number of teachers is equal to the required number in these wards. It is found that, out of 25 wards, 9 (36%) have less number of teachers and 12 (48%) wards have more number of teachers than required. The wards having negative condition are located at the fringe area, and in a part of C.B.D. of the town. As the density of population is high in C.B.D. area, the number of students is also high in respect of teachers. The peripheral wards have less number of secondary and higher secondary schools, so more teachers are needed. A better situation is found in the wards, that are dominated by residential population. The number of teachers is positively high in three (3) wards (ward no3, 11, &17) which is due to the passive effect of drop out of students at different levels. The level of educational facility is highest in ward no 8, which has highest number of institutions (8),

students (4073) and teachers(123) among others. It can be said that the better situation is found in those wards. It also indicates the better quality of institutions, as the pressure of students on a teacher is less.

Table-6.3 RELATIONSHIP BETWEEN STUDENTS AND TEACHER

Category	No of Teachers (O-E)	Wards (+)	No of Wards	Wards (-)	No of Wards
Low	1-4	4,6,10,12,15,20,	6	1,2,9,13,21	5
Moderate	4-8	7,14,16	3	5,18,19	3
High	>8	3,11,17	3	24	1
			12		9



6.2.3. Functional Gap In Job Opportunity

The scattered diagram shows that the relationship is very good and positive (Fig-6.3). The statistical analysis depict that out of 25wards 15(60%)have less number of total workers and 10(40%)wards have more number of workers than expected. The situation is not good in southern and western parts of the town, which are mainly residential in nature. A very view number of people are found to be workers in these wards, because of limited job opportunities. No of existing workers is negatively high in Pilkhana (ward no-9), NewKhata Lane(ward no-10) located at the south-eastern fringe of the town, which is nearly rural in nature. As purchasing capacity of the residents is low, any type of business can not flourished here, so the situation becomes worst. 2Workers are positively high in ward no 1 and 2, where most are engaged in agricultural activities, business or works as marginal workers and in ward no 12, where slum people are engaged in both formal and informal sectors.

Table 6.4 FUNCTIONAL GAP BETWEEN POPULATION AND WORKERS

Category	Workers (O-E)	Wards (+)	No of wards	Wards (-)	No of Wards
Very Low	<50	6,7,25	3	3,8,13,14,15,16,21,24	8
Low	50 - 100	19,22	2	11,18,20	3
Moderate	100 - 150	5,7	2	4,23	2
High	>150	1,2,12	3	9,10	2
			10		15

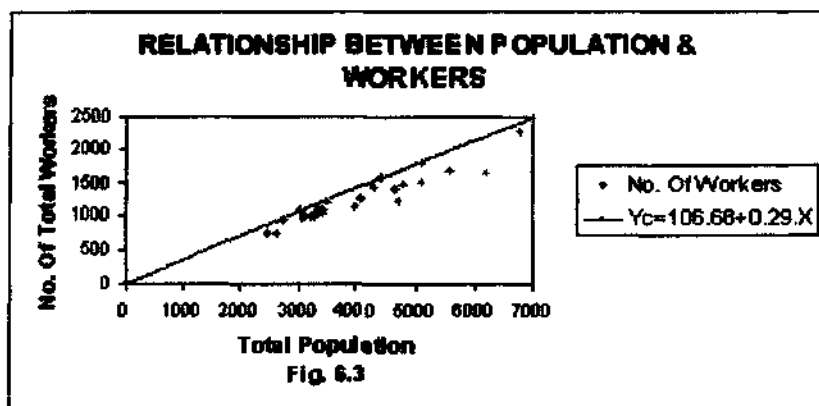


Table-6.5 FUNCTIONAL GAP BETWEEN LITERATES AND MAIN WORKERS

Category	Workers (O-E)	Wards (+)	No of Wards	Wards (-)	No of Wards
Low	<100	17,25	2	6,8,9,13,14,15,19,20,21	9
Moderate	100 - 200	1,3,4,5,7,22	6	11,16,18,23,24	5
High	>200	2,12	2	10	1
			10		15

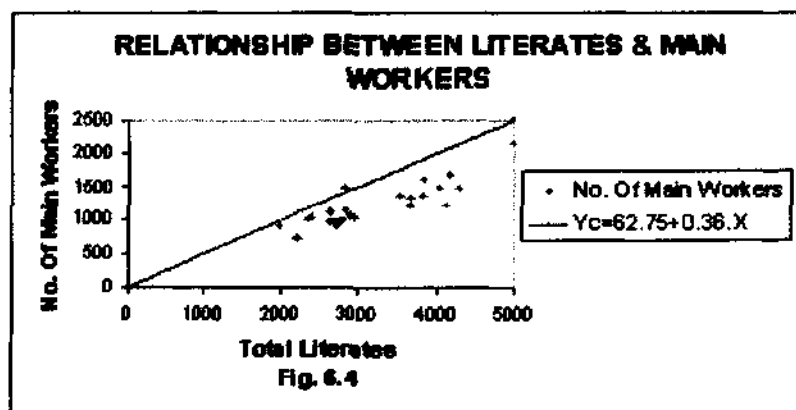
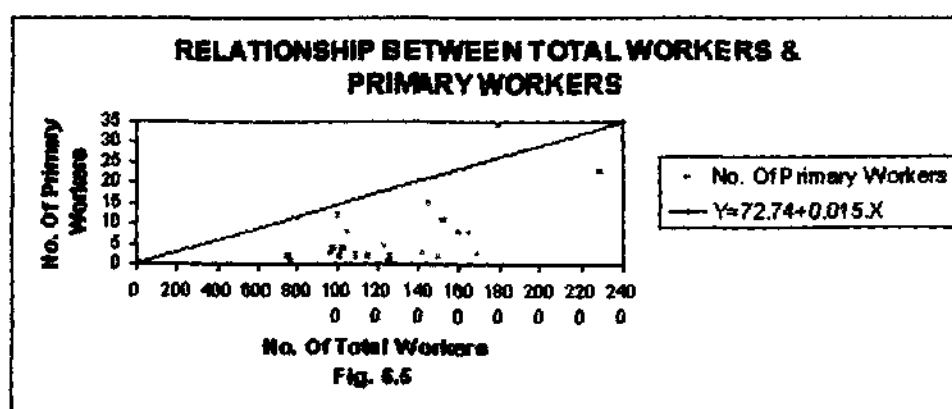


Fig-6.4 shows a good positive relationship between literates and workers. Table 6.5 shows that out of 25 wards 15(60%) have less number of workers in respect of literate persons. But a better situation is found in 10 wards(40% of the total). The wards having less number of main workers are mainly residential wards. In these wards family size is small and most of the families have one or two earning members. It is also found that, females are mostly housewives and depended population is also large in number, so beside having more literates the number of main workers become less. The number of workers is negatively high in ward no 10(Race course, Asram Para etc.), which is situated at the south-eastern part of the town. In this ward, family size is large but most of the people are unemployed.

A better situation is found in C.B.D. area and at the northern fringe of the town. Due to the concentration of workers in and around C.B.D. and large number of earning members (>than2) in each family of the peripheral wards are responsible for the better situation. Compared to the total workers less number of literates are living in fringe area which is the other reason for this. The workers are positively high in ward on 2&12, where major slums (Bhatakhana, Harijan basti) are situated with numbers of formal and informal workers.

Table-6.6 FUNCTIONAL GAP BETWEEN TOTAL WORKERS AND PRIMARY WORKERS

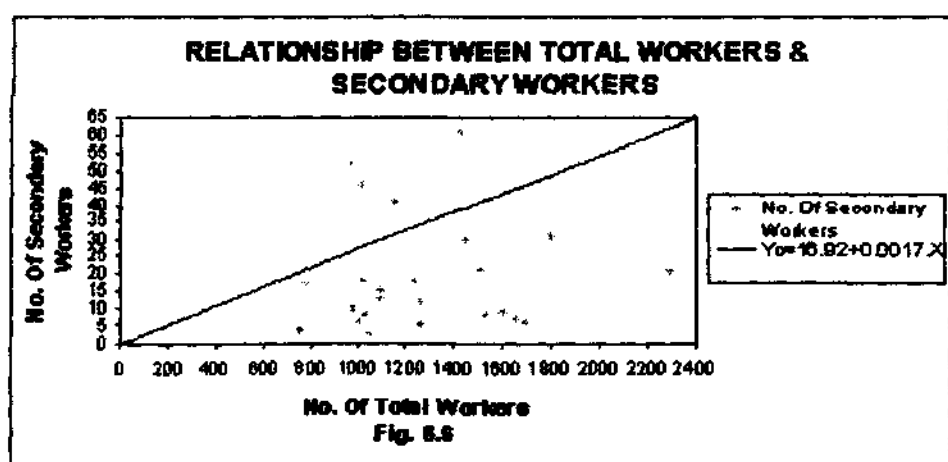
Category	Primary Workers (O-E)	Wards (+)	No of Wards	Wards (-)	No of wards
Low	<5	2,11,13,15,18,22,23	7	4,6,7,8,9,12,24,25	8
Moderate	5 - 10	16,19	2	3,10,14	3
High	>10	1,20	2	-	-
			11		11



The scattered diagram does not reveal a clear relationship between workers and primary workers (Fig-6.5). There is no variation in 12% wards (ward no 5, 7, and 21) which shows the equilibrium condition as the existing and required number of primary workers are equal. In Jalpaiguri town the number of primary workers (958) is very low, and mainly found in fringe area. Table-6.6 shows that, primary workers are positively or negatively exist in the wards, those are identical in number (11), and each of them is shared by 44% of the total wards of the town. It is very natural to find less number of primary workers in commercial area (ward no 4, 6, & 7) and in some wards where most of the workers are engaged in secondary or tertiary activities. Primary workers are more in number in the fringe area where some agricultural lands are still exist.

Table-6.7 FUNCTIONAL GAP BETWEEN TOTAL WORKERS AND SECONDARY WORKERS

Category	Secondary Workers (O-E)	Wards (+)	No of Wards	Wards (-)	No of Wards
Low	<10	2,25	2	5,6,8,15,17,23,24	7
Moderate	10 - 15	1,19	2	3,9,10,11,12,13,18,20	8
High	>15	4,14,21,22	4	16	1
			8		16

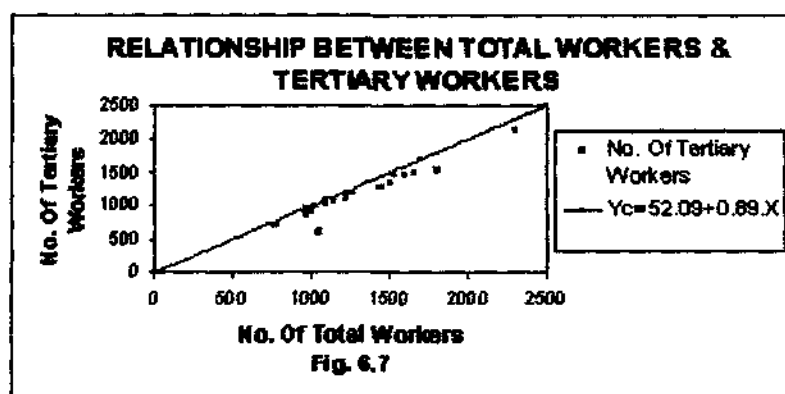


The diagram does not reveal any clear relationship between workers and secondary workers (Fig-6.6). It is found that the condition is equilibrium in only one ward (ward no 7), where small-scale industries are predominant. Out of 25 wards 16 (64% of the total) have less number of secondary workers than required and 8 wards (32%) have more number of secondary workers than

expected. The negative gap is found due to concentration of business, trade and other tertiary activities in and around C.B.D. and due to the absence of manufacturing or household industries in some residential areas of the town. The gap is negatively high in Mahamaya Para (ward no16), which is purely residential with out having any smallscale industry or manufacturing activities. To the contrary, the situation is better in the wards, those have some small scale industries i.e. wooden or metallic furniture, foodstuff or cane industry etc.

Table-6.8 FUNCTIONAL GAP BETWEEN TOTAL WORKERS AND TERTIARY WORKERS

Category	Tertiary Workers	Wards (+)	No of Wards	Wards (-)	No of Wards
Low	<25	5,6,12,20	4	4,14,21	3
Moderate	25 - 50	2,7,8,10,13,15,24	7	9,17,19,22,23,25	6
High	>50	3,11	2	1,16	2
			13		11



The scattered diagram shows a very good positive relation between the total workers and tertiary workers of the town (Fig-6.7). The statistical analysis depict that, the condition is equilibrium in only one ward (ward no18). Considering the tertiary workers in respect of total workers 44%(11 out of 25) wards shows less number of tertiary workers than required and 52%(13 out of 25) wards shows better situation. The functional gap is found in the wards, those are purely residential and lack of business facilities. In ward no 1 tertiary workers are negatively high, because primary activities are dominant here.

The situation is positive mainly in central business area and in some part of residential areas where schools, public, semi-public offices are situated. To

minimize the travel cost most people those are engaged in tertiary sector like to stay in these area. Tertiary workers are positively high in ward no3, where administrative zone is located and in ward no11, in which most workers are involved in small-scale business.

6.2.4 Functional Gap In Communication

About 15 post offices are scatteredly located in the town. Among this only Head Post Office (ward no 8) have all type of communication facilities i.e. ordinary postal service, speed-post, telephone, telegram facilities etc. About 66% post offices (10 out of 15) have speed-post facility. So, higher order service like speed-post, telegram system should be introduced in other post office near C.B.D.

6.3 SPATIAL GAP

6.3.1 Spatial Gap In Education

Educational institutions of all level are unevenly situated among the wards. Each and every ward has primary schools but, the number of school is insufficient as the population per primary school is very high. The situation is worst in ward no 9 (3093 persons/primary school), which is located at the south-eastern fringe area, and followed by ward no15 (3103 persons/primary school), ward no 22(2753 persons/primary school) and others. So, more primary schools are required in ward no 9,10,15,22 & 23 for the easy accessibility for children. The situation is very poor in case of Jr. High school. There are only three (3) Jr. High school, among these two are located closely (ward no 2&3) at the eastern side of River Karala. The rest one is situated in almost opposite direction leaving a big gap between them.

The location of secondary schools are quite unscientific as four (4) out of seven (7) schools are located in two adjacent wards and remaining 18 wards have no secondary school. So, more secondary schools are needed in north- eastern part (ward no 1,2,3) southeastern part (ward no 9,10,11) and western part (ward no22,23) of the town. Population per secondary school is low (1143persons/secondary school) in ward no16 and high (4648persons/secondary school) in ward no14.

The spatial gap in higher secondary schools is also very prominent. There is a tendency to concentrate in neighbouring wards leaving gaps between the other wards. A wide gap is

found in the western part of the municipality, where more higher order schools are to be established. The school situated in ward no 3 served the highest no of people (5578 persons/higher secondary school). The lowest number of people (1716 persons/higher secondary) served by the school situated in ward no 8, as two schools (both Boys & Girls) are situated here. So, it can be said that the condition is good in this ward.

6.3.2. Spatial Gap In Health Care Facility

Jalpaiguri town has only one (1) hospital, situated in ward no 1. To determine the trend of population served by hospital, five concentric circles has been drawn at a interval of 1 km, which reveal the number of population getting medical facility with the increase of each km distance from the Sadar Hospital. It is found that, from Zone I to Zone IV population increasing with per km. increase of distance from Sadar Hospital, which indicate the facility is less accessible to the people living away from the hospital (Fig-6.8). After Zone IV there is a decreasing trend of population with increase of each km, which is natural. But most of the people (>than50%) of the town have to cover 3 or 4 km. distance to get medicare. So, it can be said that, the hospital is not scientifically located in the town. To minimize this gap more health services are to be installed in southern and western part of the town.

6.3.3. Spatial Gap In Trade And Commerce

The major commercial activitie of the town is carried out through Dinbazar, which is located in the C.B.D. of the town (ward no4). The five density- zone around C.B.D. (Fig-6.10) represent the accessibility of market facility per km. in Jalpaiguri town. The diagram (Fig-6.10 & 6.11) reveals that, from Zone I to Zone IV the density of population gradually decreases with the increase of each km. distance from C.B.D, which is quite natural. People like to stay in and around the C.B.D. to get the better availability and easy accessibility of market. But after Zone IV the density increased in Zone V, which is an exception. This is due to the fact that, Zone V occupying the peripheral wards, those are larger in area and population than other wards. Five daily retail markets of the town are situated at north (ward no 25), mid-eastern (ward no8) southern (ward no 13) and central part (ward no 4 & 17) of the town. Population of 20% wards(5 out of 25) are well facilitated compared to others due to the nearness and easy accessibility of market place.

POPULATION ZONES AROUND SADAR HOSPITAL

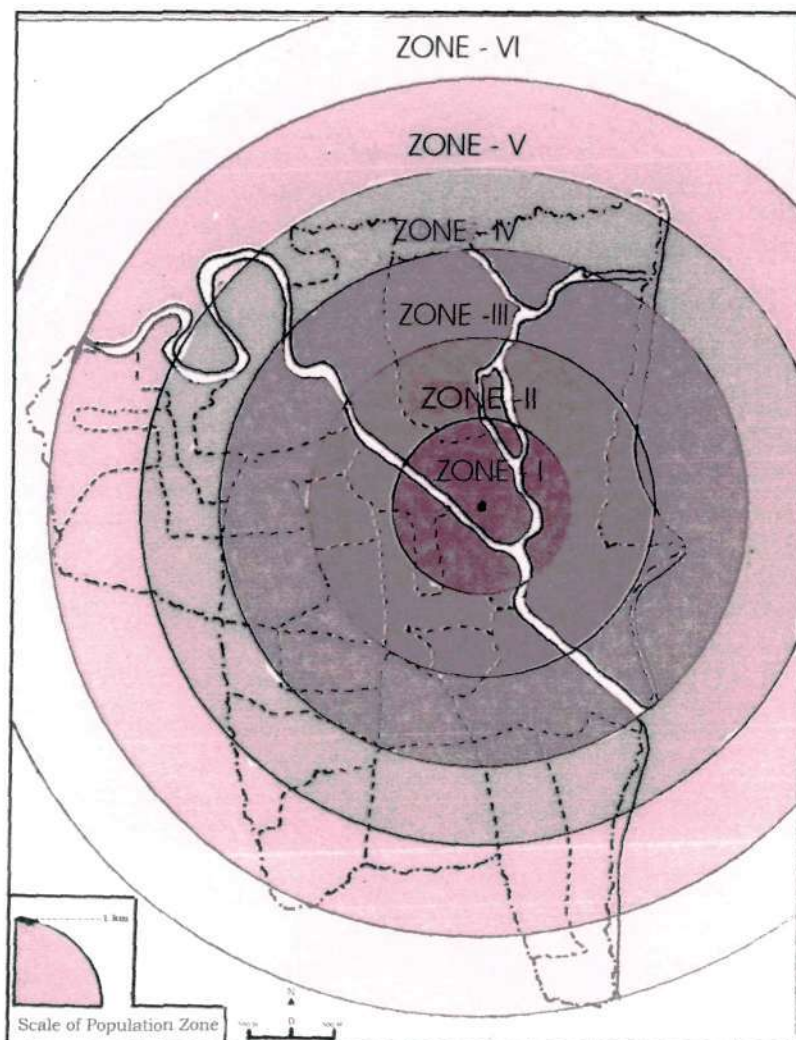


Fig - 6.8

POPULATION SERVED BY SADAR HOSPITAL

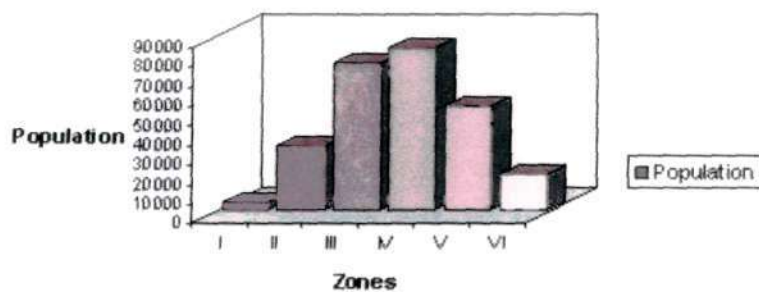


Fig. 6.9

DENSITY ZONES AROUND C.B.D

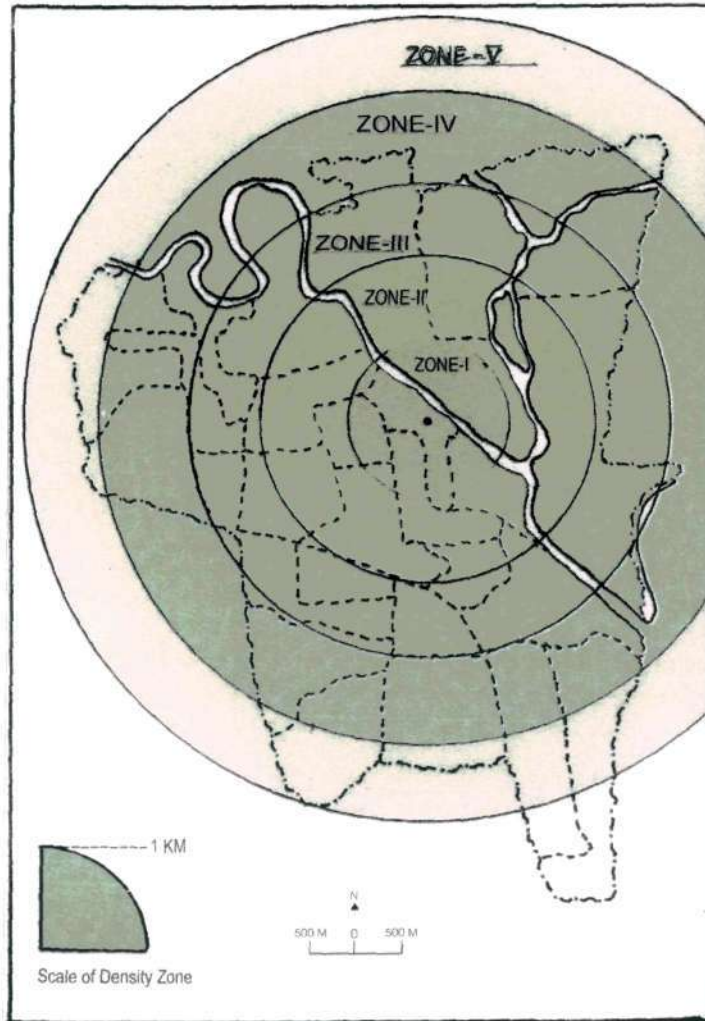


Fig - 6.10

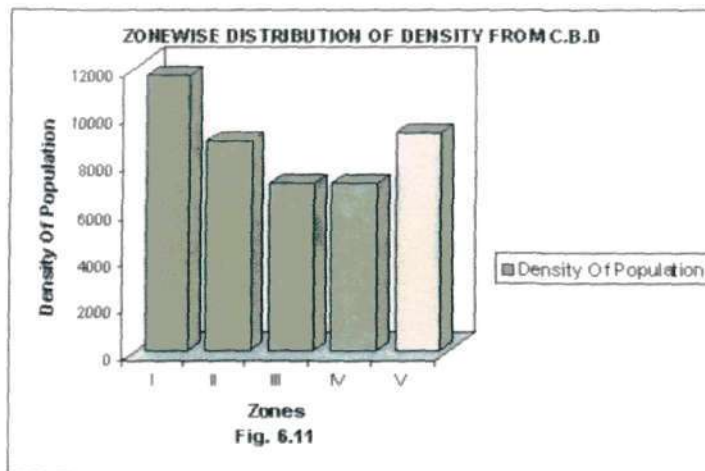


Fig. 6.11

6.3.4. Spatial Gap In Communication

About 15 post offices are unevenly located in the town. Table 6.9 shows that the command population per post office is highest (>8000 persons/post office) in three wards (ward no 9,13 & 17). The command population per post office is high in ward no 15 as the pressure of population is high in this ward. The command population per post office is low to very low in north eastern, eastern part and in C.B.D. as more than one post office are located to serve the residents.

Table-6.9 COMMAND POPULATION WITH NUMBER OF POST OFFICE

Command Pop/P.O	No of Post Office	% of Post Office
<5000	4	27
5000 - 6000	4	27
6000 - 7000	3	20
7000 - 8000	1	6
>8000	3	20
Total	15	100

6.3.5. Spatial Gap In Water Supply

The over all water supply is satisfactory in Jalpaiguri town. But the zone wise variation of water stand post /1000 population for public use can be observed (Table-6.10).

Table-6.10 ZONE WISE WATER STAND POST /1000 POPULATION

Category	Stand Post /1000 Population	Zone
Low	<5.5	I(north-eastern), II(eastern)
Moderate	5.5 - 6.5	V(southern)
High	>6.5	III(central),IV(north-western)

Water stand post/1000 population is low (< than 5.5 stand post/1000pop) in north-eastern and southern part of the town, and high(>6.5 stand post/1000pop) in central and north-western part. So, more number of stand posts are required in Raikat Para, Walkarganj, Sen Para (north-eastern) and Pilkhana, Race-course, New-Khata Lane (south-eastern) area.

CONCLUSION

From the over all study it is visualized that, some of the wards have poor infrastructural facilities in the case of some amenities. The existing functions are haphazardly distributed among the wards. Literates are high in respect of total population in central and southern part of the town. A large number of educational institutions, economic capability of the people and efficient means of communication are the reasons for high concentration of literates in the residential areas like Mahanta Para, Ananda Para, Ukil Para, Deshbandhu Para etc. It is found that primary schools are scatteredly situated through out the town, but both secondary and higher secondary schools are concentrate in selected areas leaving wide gaps in western and north-eastern part of the town. Due to the inadequacy of secondary and high secondary schools in the town the tendency to drop out by the students is noticed in higher order schools. The functional gap between institutions should be filled up by setting up new schools at desire level or to convert lower order schools to higher order. Except Hospital Para and Hakim Para the entire eastern part of River Karala is neglected than the western part. So, it can be said that the existing educational facility is inadequate in eastern part of River Karala. The infrastructural facility of educational institutions is better in some of the secondary and higher secondary schools and colleges, and rests are lacking in required no of teachers and other facilities. To minimize the spatial gap between schools, a number of primary and secondary schools are to be initiated in Pilkhana, walkarganj, Rajbari Para etc. area and at least 3 Junior High school should be established in Bamun Para, Arabindra Nagar, Netaji Para area to serve at least 1k.m.around it.

It is very natural to found more number of workers in the main business center of the town (ward no 5,6,7,19) and in the slums where adults and children both work for earning bread. The wards having less number of main workers are mainly residential wards, where housewives and depended population are large in number. Beside having a positive relation between literates and main workers, the town suffers from adequate job opportunities in all sectors. It can be said that, with the increase of literacy, cultural and economic development primary workers are decreasing day by day and only found in fringe area, where some agricultural lands are still exist. Secondary workers are not predominant in the town as small-

scale industries are very few in number. Tertiary workers are mostly found in central business area and in some part of residential areas.

In the town Sadar Hospital is situated unscientifically and inadequate for such a larger population of the town. The average distance between two markets is 2 km. and the entire western part, north-eastern part have no daily markets. So, to minimize the travel distance between the existing markets at least 4 daily markets have to be established in Walkarganj (ward no2), Sen Para (ward no3), Pilkhana (ward no9), New town Para (ward no20) for easy accessibility and quick service. Existing markets should be developed.

Post offices are unevenly located in the town. To meet the need of the people and for easy accessibility new post offices should be initiated in Bose Para or arabindra Nagar and Bhatakhana area. It is also found that water supply is sufficient in the town, but more number of public water stand posts are to be installed in Walkarganj, Pilkhana area.

From the over all discussion it is found that, in Jalpaiguri town all wards have educational facility. About 48% wards of the town have both educational and postal facility, are located in north-eastern part, (Rajbari Para, Sen Para) C.B.D. area, (Dinbazar, D.B.C. road)), middle part (Mahanta para, Ananda Para), south-western part (W. Congress Para, Bawbazar) of the town. As these wards are poor in functions, higher order functions are to be needed. About 24% wards have educational, postal and financial institutions, those are mostly concentrate near C.B.D. Out of 25 wards only 5 (20% of the total) wards have all type of facilities, and are scatteredly situated in C.B.D (ward no 5), mid-eastern part (ward no 8), central part (ward no 17) of the town. As the demand is high in and around C.B.D, it is natural that the number of functions and their level is also high in these areas. It can be concluded that to develop the town, the spatial and functional gaps have to be filled up by setting up new functions in the appropriate place among the wards as well as in the town.

CHAPTER – VII

IDENTIFICATION OF MAJOR PROBLEMS IN THE TOWN

INTRODUCTION: -

Urbanization is a natural consequence of economic change that takes place as country develops. Urban areas, depending on their size and type, spread innovations to their hinterlands through various forms of urban-rural and regional linkages. Administration, trade, commerce and several urban amenities are the key urbanizing elements, which attract people from neighboring areas to Jalpaiguri town. Along with natural increase, a large influx of immigrants creates problems to its urban life. Being an unplanned old town Jalpaiguri failed to promote the modern urban facilities to its residents in an organized manner. Thus like other towns, Jalpaiguri is facing the problem of deficit and uneven distribution of urban amenities. The gaps between available urban infrastructure and their demand among the people have been increasing continuously in the town, which give birth to several problems. Some of these problems are very acute and need attention for identification. This chapter deals with some problems, which were identified at the time of field survey.

7.1 PHYSICAL PROBLEMS

River Karala is one of the natural drainage channel, which diagonally bisected the town and stretch for 5.20 km² from northwest to southeast acts as an important physical barrier. The early builders of the town have found the Tista-karala levee as relatively safe zone. Most of the European settlements were constructed along this Tista-Karala Levee. After independence the town expanded at the south of river Karala, and people like to reside in this part due to availability of urban facilities. But the growth of town was restricted at the east by river Karala. At the east of river Karala, river Dhardhara acts as a physical barrier and creates problem for the connection to the extreme east. There are seven connecting bridges on this river, which is not sufficient to connect the eastern part of the town. There are only three concrete bridges on river Karala at the southern half of the town, which is not sufficient and obstructed the flow of vehicles during the peak hours. Another two bridges at the north connect the municipality with the outer part of the town. At the east along the river Tista an impressive embankment was

constructed to protect the town from flood, which restricted the urban sewer and storm water disposal system and caused problems for the dwellers. The railway track criss-cross the town at the middle part and restricts the easy movement of the people from the southern part to the central business district of the town. There are only three railway gates such as Ghoomti no 2, 3 and Ghoomti no 4 connect the southern half to the central part of the town. Long queues of vehicles caused traffic jam at the gates.

7.2 DEMOGRAPHIC PROBLEMS

7.2.1 Pressure of Population

Pressure of population growth acts as an obstacle to it's growth. Growth of population accelerates the developmental process of the town and side-by-side it also hindered the growth of living standards of that center. Thus, the study of population growth has drawn much attention of social scientists not only in India, but also abroad.

The rapid population growth after independence put tremendous pressure on urban fabric of Jalpaiguri town. It is argued that the growth of population results in crisis of housing and related basic services in the town and lack of employment opportunities. Very low rate of industrialization in the town results in increase of marginal laborers, and informal workers, which further reflected in low economic condition of people. Urban poverty has resulted in proliferation of slums in the town. It is found that about 66.8% of the total population of Jalpaiguri in 2001 is non-worker. Among the non-workers 80 % are slum people, and they are mainly concentrated in Badambasti, Muslimbasti, Harijonbasti etc. area.

7.3 LAND USE PROBLEMS

Land under different uses in Jalpaiguri town, which has discussed in previous chapter (Chapter no III) shows the evolution and pattern of land use in the light of locational and historical background. It is found that the town is an unplanned town with densely populated residential areas and with a business center named Dinbazar. Higher utilization rate can be achieved by vertical development particularly for residential areas. The commercial area becomes more congested and the development takes place in an uneven manner, that need a proper plan for future development.

7.3.1 Inter Relationship Of Different Uses

The evolution of past land use pattern of the town is reflected through the existing land use pattern, which gives an impression that the types and proportions of use is not satisfactory. The central business district of the town is associated with various activities, those are unable to form a compatible relationship with other uses. As a result mixed type of land use is common here. Some industrial units are developed near C.B.D. for the easy accessibility of the business center, but required more space for its development. Some residential houses are converted into residential cum commercial uses in the commercial area of the town.

7.3.1.i Incompatible Land Use

The existing land use pattern of Jalpaiguri town is observed minutely, which reflects that some of the land uses are incompatible. It is found that some public sectors are developing in residential areas of the town, besides having a separate zone for public or semipublic uses at the eastern part of the town. Another incompatible use of land is found in the residential areas, where some small scale industries, workshops, publishing units are located haphazardly. Due to the expansion of miscellaneous uses of lands in the town without having any proper planning, incompatibility is increasing day by day. Jalpaiguri Sadar Hospital, Jail, slums along railway land among the public uses are also considered as incompatible use.

7.3.1.ii Inefficient Land Use

It is found during field survey that, in some cases the land, which is at present utilized by them, can be utilized much more efficiently for other uses. The location of some schools like Marwary Girls High School at Dinbazar, Central Girl's High School and Sonaulah High School along the major business thorough fare are not suitable for this purpose. Some of the government offices are located in residential areas of the town, those are not suitable for these purpose. The land use in the congested part of Dinbazar is also considered as inefficient use.

7.3.2 Selection Of Norms And Their Application

For allocating appropriate proportion of land to different uses, the norms selected are based on Webster (1958), supplemented by Indian standard. In developing countries the urban centers, especially cities are facing a problem of over crowding, Jalpaiguri is not an exception.

According to Webster, in the average city, about 40 percent of the developed area is in residential use. The Indian Standard for this use is also the same. In Jalpaiguri town 60.3% land has devoted to this purpose, that is far above the average. The main problem of residential areas is lack of space, which is the result of high density of population and high intensity of residential land uses in the town. The large share of residential use reveals that, utilization of land for residential purpose is dominant than other uses in the town. The proliferation of several slums is due to increasing shortage of land and shortage of housing in the residential areas of the town. Another problem is that, the residential use is not continuous and interrupted by commercial and industrial uses near C.B.D.

According to Webster, in a city, 2 to 5 percent of the developed land is in commercial use, which is 6.6% in the town. The main problem of commercial use is that, it is not distributed systematically which results in unbalanced growth of commercial land use. In commercial zones, encroachment of residential houses for business purpose results in a mixed use of land, which is difficult to recognized the commercial lands in the town. The presence of go-downs in residential areas, and wholesale markets are responsible for traffic congestion and insanitary condition.

According to Webster, in an average city, 10 to 15 percent of the developed land is in industrial use, which is 0.5% in Jalpaiguri town in 2007, which is far behind from the standard norm. Except a few small- scale industries, any large- scale industrial units can not flourished, because of lack of capital resources and absence of raw materials. The major shortcomings in industrial land use are the absence of separate industrial zone, and its mixture with residential and commercial uses.

In India any town should have 16 to 22% land under public and semi-public use, where as only 5% land is devoted to this purpose in Jalpaiguri town. The problem of uneven distribution and inefficient use of land under this category are also observed. Some educational institutions, and public offices are situated at the congested part or along the major commercial thoroughfare of the town, which is unsuitable for their location.

Looked at from the urban point of view the function of the green (open space) in the town is positive. Open spaces are encroached due to excessive pressure of population and demand for land for various use. The general planning standard for parks and playground is expressed in the ratio (250 persons / hectare land), which is more than the actual average in the town. On an average, 28% of the developed area of the central city is devoted to streets (Bartholomew 1955). In Jalpaiguri town land used for such purpose is far beyond the norm.

With the increase of population, residential uses of land is increasing day by day which results in congestion in residential areas of the town. Higher utilization rate can be achieved by vertical development of residential areas.

7.4 SOCIO-ECONOMIC PROBLEMS

In Jalpaiguri town the Municipal authorities promote the basic amenities, those are unevenly distributed in the town. This unscientific distribution of amenities creates several problems for the town dwellers. These problems are associated with educational, medical, transport and communicational etc.

7.4.1 Problems In Education Facilities

The existing educational facility is inadequate in eastern part of river Karala. Schools of secondary and higher secondary levels are concentrate in selected areas leaving wide gaps in western and north eastern part of the town. In respect of students in H. S and college level the institutions are found inadequate. Play ground and other infrastructural facilities are poor in some of the schools. Children in some primary schools still use to sit on the floor. The tendency of drop out by the students is become a problem in higher order schools.

7.4.2 Problems Related to Medical Facility

The medical facility in the town is far from satisfactory. In the town Sadar Hospital is situated unscientifically and inadequate for such a larger population of the town. It is found that, the number of doctors per 10,000 persons is 5.4 in Sadar Hospital, which is very low. And the number of beds per 10,000 persons was 6.079 in 2003, which was also very insufficient. It is also found that, the condition of hospital is very unhygienic. In sufficiency of vehicles is another problem of the hospital. As the hospital is located at the left bank of river Karala, the people of

entire western and southern part are lactant to avail the hospital facility. The unhygienic and unsanitary environment of the slums aggravates the spread of communicable diseases, which is one of the major problems of the town.

7.4.3 Problems Related To Trade And Commerce

The entire western part, northeastern parts of the town have no daily markets. There is no separate wholesale market, and specialized market in the town. Condition of shops is very poor in daily markets. And most of the vegetable or fish sellers sit under open sky. Due to insufficient space inside the shops or go-downs footpaths are used temporarily as storing place. Absence of parking spaces and space for loading, unloading results in congestion, which obstructed in easy vehicular movements in the market. Most of the markets have no proper lay out system, which results in unhygienic atmosphere in fish or vegetable markets.



Plate 9 Vegetable Shops Under Open Sky at Station Market

7.4.4 Problems Related To Small Scale Industry

The industries are associated with the shortage of space for the industrial plant in the town and shortage of capital investment. The local supply of raw materials for industrial units is inadequate and irregular. The chronic power shortage for industrial purpose is one of the important problems for its growth. So, it can be said that, lack of industrial infrastructure large-scale industries could not flourish in the town.

7.4.5 Problems Related To Transport And Communication

The economic development of any town depends upon the proper transport and communication system, but it is not up to the mark in Jalpaiguri town. Like any other Indian city the town also suffers from bad road condition, traffic congestion etc, those become most acute problem of the town. The major transport and communication problems are follows.

7.4.5.i Road Condition

Roads interlink entire part of the town; those ultimately formed a rectangular pattern of road network in the town. Majority of roads in the town are narrow and serpentine. The average width of roads in the town is not sufficient for traffic flow. Some of the roads and culverts are unsuitable for the movement of heavy vehicles. Large grooves are common along the Station Feeder Road, Mahanta Para Road, New Town Para Road, Walkarganj etc. and sides of roads are also found broken i.e., along Siliguri – Jalpaiguri Road, Hospital Road etc.

7.4.5.ii Poor Maintenance Of Roads And Bus Stands

The maintenance of roads and streets are very poor. Most of the main through fares and roads are not repaired and maintained timely by the respective department. Majority of roads of the town are full of dirt and garbage. Unremoved construction waste, debris along the road side at the innerpart of the town caused accidents specially during power cut. The busstands have no proper shades for buses and passengers. Absence of waiting rooms, lavatory facility and ill-maintenance create problems for passengers.

7.4.5.iii Absence Of Parking Space

One of the major problems being faced today is shortage of parking space. As Jalpaiguri is an unplanned town, there is no proper parking space specially in and around C.B.D and at the main business thoroughfare. Parking space is also absent in front of schools, hospital and nursing homes of the town, which caused congestion and increases the chance of road accidents. The front side of shops are obstructed by vehicles, those are parked haphazardly hindered the easy flow of customers during peak hours.

7.4.5.iv Traffic Congestion

Traffic congestion has become a common problem in every city. Jalpaiguri is not an exception. During peak hours (10-11.30 a.m) heavy traffic congestion is found at Kadamtala, Dinbazar More, Beguntary, and at the crossing near Head Post Office. Railway gate i.e. Ghoomti no 3 and 4 and its adjoining areas have been suffering from intense traffic jam, which is found to be beyond control. During the closure of rail gate at the Ghoomti no 3, long queues of vehicles caused traffic jam. The buses playing between Jalpaiguri to Haldibari have no proper terminus, as a result buses occupy the half of the width of that road caused traffic congestion in that area. Due to the absence of traffic control system at the important junctions such as Provat More at D.B.C Road also caused traffic jam. The increasing number of rickshaws and two wheelers aggravate traffic congestion in the town.



Plate 10 Traffic Jam at Railway Crossing (Goomti No 3)

7.4.5.v Uneven Distribution Of Communication Facility

Communication facility is much lower at the fringe than C.B.D. Accessibility of post office is low at the fringe, and P.C.O booths are also less in number. Courier service facility is absent here. So, it can be said that, uneven distribution of communication facility is a problem for the people living at the peripheral wards of the town.

7.4.6 Problem Of Lighting System

The daily supply of electricity is quite insufficient. Short of voltage and load shading has become a great problem to the residents. During summer the frequent load shadings with a minimum duration of one hour is become common, which is intolerable. More streetlights are

required to meet the demand for public safety. But it is found at many lights posts are remaining without lamps for a long period, and municipal authority do not care about this. Most of the streetlights in peripheral wards remain disorder for long period, which aggravate the chance of road accidents, and antisocial activities. The main business thoroughfare requires more Halozen lights to check the incidents of crime at the night. A major part of the town is still remaining in darkness. More over, the services of the State Electricity Board are not satisfactory.

7.4.7 Problems Related Water Supply

During 1991-2001 the population pressure increases so rapidly, that the water supply failed to fulfill the total demand of the people in the town. The daily consumption pattern shows that, the water supply is little bit inadequate in and around C.B.D and in the main residential area in the central part of the town. Ward no 2 and 3 have large area, where number of water stand post is very low. Broken taps and stand posts are the evidence of poor maintenance and inefficiency of the municipal authority. Clorinization process, which is used to purify the water stored in overhead tanks, is found irregular.

7.5 ENVIRONMENTAL PROBLEMS

Like any other Indian town, the problem of environmental pollution exists in Jalpaiguri town. In the town the choked drains, dump of garbage on roadsides, open drains and in sanitary streets are crux of the issue. With the growth of population along with their various activities, the environment becomes gradually crippled due to their unconsumness about the environment.

7.5.1 Problems Related To Waste Materials

The volume of liquid and solid wastes in the town is great due to large population and higher standard of living now a day. The municipal services for waste disposal in Jalpaiguri town collected garbage from both domestic and commercial areas consist of organic and inorganic matters in wide variety and form.

7.5.1.i Heaps Of Garbage

In Jalpaiguri, people don't look out for a garbage bin and throw out waste materials on the road or on the footpath. Majority of houses in C.B.D. area use road haphazardly for dumping garbage due to absence of proper dustbins. Solid wastes include rags, paper, plastics, construction waste

etc. The increasing amount of plastics emerges as a threat to its environment. Medical wastes like medicine rappers, cotton, injection bottles etc are thrown to river Karala are hazardous in nature. In most cases, the garbage finally accumulates into drains causing drainage congestion and water logging problem.

7.5.1.ii Problems Related To Waste Disposal

Jalpaiguri town use the old method of waste disposal, that is 'landfill' disposal method, which leads serious environmental problems. Garbage and rubbish tend to be dumped, and converted into landfill at the dumping ground. Leaching of germs from the landfill during rainy season causes air and soil pollution. Each particular kind of waste has separate disposal system, which is not maintained in the time of collecting and dumping. Wastewater is discharged without treatment either into river Karala, Gadadhar or into the paddy fields.



Plate 11 A Garbage Heap : Improper Sewage

7.5.1.iii Problems Related To Service

Due to inefficient sanitary workers, inadequate equipments and vehicles, the service becomes irregular which lead to spread of disease risks through insects and micro-organisms. About 12,000 lt. Septic tank sludge is removed in every month, which is not sufficient and this service is also very irregular. Liquid spray like larvaicide's is rarely used in stagnant water, as a result it become the breeding ground of mosquitoes.

7.5.2 Problems Related To Sewarage And Drainage

The town has no proper provision of drainage and sewerage, which is essential for healthy urban environment.

7.5.2.i Sewerage System

The sewerage system of the town is open channel system, and mostly is of kutchra type. The household wastewater from kitchen sinks, baths are led to drains through these, which leave organic wastes exposed and enhances the risks of spreading diseases. Problems of sewerage are very prominent in the densely populated residential zones and at the peripheral wards. In markets the environment become very unhygienic due to the absence of layout system. Most of the slum houses have no sewerage system, which is alarming for its environment. Some settlements are constructed illegally caused obstruction in sewerage system. As a result garbage and wastewater clogged the drains and generate harmful odours. The removal of sludge from drains is very irregular. The drains are not levelled according to slope, which hampered the easy flow of water.

7.5.2.ii Drainage Problem

Drainage problem is one of the major problems caused water logging in the town. Embankments along the rivers and N.F. Railway track act as the main drainage barrier. Unplanned urban growth in low-lying areas without having enough space for storm water flow aggravates the problem of water logging. The areas have been experiencing water logging hazards are –

- (a) An area between river Karala and Tista at Hospital Para, Hakim para, Sen Para are the main water logged area of the eastern part of the town. During monsoon months. This area suffers from periodic water logging caused by river Karala itself.



Plate 12 Stagnation of Water on a Main Thoroughfare

- (b) Dinbazar, Samaj Para, Babu Para area is one of the most urbanized area of the town with out having proper storm water disposal system. This area becomes ~~water~~ waterlogged after a medium shower as the drains are encroached for commercial purpose.
- (c) At present Netaji Para, Santi Para, Boilkhana area does not have any natural disposal way. The former waterway from Santi Para to Sebagram through Kanteswari Deeghi is decayed due to the increase of settlements and as a result excess rainwater is discharged over the residential area.
- (d) A vast area at the north of railway track includes New town Para. Bose Para, Tarundal, Ananda Para, Muhuri Para become water logged even after a low shower, which ultimately drained into river Gadadhar. The culverts in New Town Para and near 4 no Ghoomti are inadequate to drain the access water and caused severe water logging problem. The railway track is the main cause for water logging in this area.



Plate 13 Unpalnned Drainage – Obstructed by Railway Line

- (e) Natun para and Darjee Para located in a basin like area, which is extended up to the railway track at the south, where water logging is very common. Railway track at the south and embankment of river Karala at the east are the main drainage barriers of this zone.
- (f) At the southern part of the railway track, the general slope is from north to south. The storm water from the whole north western part is drained out through this area, and as a result when drains are not able to carry storm water it over flow the

Mahamaya Para, Harijan basti, Panda Para, Adar Para area. Unplanned urban expansion and encroachment of wet- lands at the fringe is responsible for water logging in this part of the town.

Some man made drainage is found in the town, which is not sufficient and is not so effective too.

7.6 LACK OF COMMUNITY FACILITY

Community facilities like open spaces, parks, and playgrounds, which are used by town dwellers, are inadequate in respect to its population. Parks are situated at the extreme east and most of the dwellers cannot avail the opportunity from the open space. The number of auditoriums, cinema halls is very few, and the existing recreational places are less accessible for the people of northern and western part of the town. Clubs, libraries are not many in the town. And due to lack of infrastructural facilities, libraries, clubs survive with the help of number subscription. The town requires five (5) parks per 10,000 persons, which is far from the reality. Open spaces and playgrounds are converted to residential plots due to scarcity of lands in the town, which is harmful for the ecological environment of the town.

7.7 PROBLEMS RELATED SLUMS

One of the most serious problems generated by the rapid urbanization process is the emergence of slums in the town. Continuous growth of population has led to congestion, lack of space, over-crowding and emergence of slums in the town. Shortage of housing accommodation is responsible for the growth of slum settlements on public lands, which create problem for further use of that land. Slum settlement, are prone to water logging during rainy season, and become unsuitable for living. Absence of proper sewerage, haphazard and uncontrolled dumping of wastes at the adjacent land of slum houses is associated with health and environmental hazard in slum. Slum people suffers from contagious diseases due to damp and unhygienic condition of houses, which affect the workforce of the town, specially in informal sectors. The economic condition of slum people is very poor, and mostly they are unskilled labourers. It is also found that poverty and unemployment forced some of the poor people to involve in antisocial activities, which become a serious social problem in the town.



Plate 14 Slum Area Encroaching Railway Land

7.8 INSTITUTIONAL PROBLEMS

There are also some institutional problems such as land reform problem, problem related with land distribution among poorer, land development, taxation and other problems

CONCLUSION

The over all study reveal that the physical and socio-economic conditions of the town have deteriorated very rapidly, due to alarming population increase during the last 20 years. In the town several amenities are unevenly distributed leaving gaps between core and peripheral areas. It is found that in core area, problem increased due to congestion, shortage of housing along with mix of small-scale industries in residential area, emergence of slums etc. These all increase the complexity of urban life at the central part of the town. On the other hand the peripheral wards have less developed transport facility, inadequate lighting, medical facility etc. There areas are characterized by improper drainage, heaps of garbage on roadside, along with other problems. The increased population of the town hampered the provisions of adequate electricity supply, educational institutions, expansion of commercial activities in a balance way, and thus creates problem for the town dwellers. So, it can be said that, growth of population and urbanization has occurred along with poverty, proliferation of slums, and differential access to basic services. In Jalpaiguri town the growth of population played a conflicting role in the developmental process, which obstructed the growth of living standard. The lands are used for commercial, residential, public-purpose etc. in an unplanned way. The high intensity of land use

special mixed use of land in and around C.B.D. creates some disadvantages e.g. unhealthy condition of living, air pollution, accumulation of garbage along the roadside. The land use pattern is incompatible, and lands are not used efficiently in every part of the town. The left bank of river Karala is found neglected, as it is not well connected with right bank of river Karala. And the concentration of educational, medical business activities help in development of the area situated at the right bank of river Karala. Absence of any large- scale industry, and consumer oriented local market facility are the reasons for slow economic development of the town. It is found that roads are of severely damage prone in nature. The rapid growth of population along with tremendous increase in the vehicular traffic, are the main causes of traffic congestion along the main roads of the town. The drainage condition is very poor, and garbage is not removed regularly. As a result the absence of good conservancy services has made the town quite unhygienic. Lack of open spaces, the scarcity of parks, and public places, pose problem to the town dwellers.

Thus, several demographic, socio-economic problems become acute because the urban facilities failed to cope up with the haphazard growth due to lack of proper planning and defective implementation of earlier plans. So proper planning for balance development is needed in the town.

CHAPTER – VIII

DIFFERENT DEVELOPMENT STRATEGIES

INTRODUCTION

The existing condition of towns and cities, which have been deteriorated by the rapid growth of urbanization, needs immediate actions to renew their old picture. According to Tripathi (1996) it is very essential to include urbanization in policy framework of regional development and planning. City Planning is simply the exercise of existing socio-economic and physical condition, which will promote the development of city and its environments along rational lines. Planning is an active modern force-consciousness and probably a discipline engaging many professional groups in which geographers' role is unique. For a successful town planning there must be a plan, which envisages the entire town as a single unit.

Several problems faced by the town dwellers, have been discussed in the previous chapter, where the reasons of these problems, stagnation of their development are also analysed. In this Chapter different developmental plans formulated by different agencies in the past have been outlined and reviewed. This chapter also deals with some strategies those are partly implied in the recent periods and rests will be applied in near future. In order to have a proper development of an old town like Jalpaiguri, an expert plan is essential.

In the above background, it is imperative for the Policy Agenda for urban India to address the constraints in the provision of urban infrastructure and services and the supply of housing to the growing mass of urban population. The urban Agenda should address some key issues of urban management with a view to making the cities and towns economically efficient, socially equitable and environmentally sustainable (Venkateswarlu, 1999). The 12th schedule of the constitution (74th Amendment, 1992) enlists some functions as belonging to the Municipalities, such as urban planning including town planning, regulation of land use and construction of buildings, roads, bridges, water supply for domestic, industrial and commercial

purposes public health, sanitation, conservancy, solid waste management, urban forestry, protection of environment and an integrated planning for economic and social development. Planning for the weaker section includes slum improvements, poverty alleviation etc. The urban development being a state subject, includes different urban sectors without any overlapping.

8.1 EARLIER STRATEGIES AND THEIR IMPLICATION

Jalpaiguri town did not have any effective urban plans before the implication of O.D.P. The O.D.P area of Jalpaiguri extended over 166.4 km² and included the municipal area with the peripheral mouzas like Kharia, Patkata, and Paharpur. The O.D.P Jalpaiguri estimated the projected population (80,124 persons) in the town for 2001, which was far from the reality. The sectoral employment pattern of the O.D.P area in 1981 in the town revealed that, the urban areas had primarily tertiary services, but the people of the peripheral rural areas were engaged in agricultural activities.

Recommendations Of O.D.P

- The outline development plans proposed a number of industrial units in the neighbouring areas of the town mainly based on engineering and electricals. An industrial belt was proposed at RaniNagar, 8 km apart the town.
- For the improvement of its commercial importance, the plan recommended some new commercial areas in different parts in the town.
- The plan has pleaded for the formation of an administrative complex to accommodate several state and central government establishments; those were located at rented houses in the residential areas of the town.
- The plan has proposed a piped water supply scheme by P.H.E Department, which also proposed to increase the number of stand post in the town.
- The Municipal Engineering Dept. proposed a comprehensive drainage scheme to control the waterlogging problem in the town. The trenching ground had suggested to shift near Panga Air Field and the improvements of collection and disposal system of solid and liquid waste were also suggested.
- To solve the housing problem the state government planned for rental housing scheme at Racecourse area with a provision of 212 housing units. The state government also

proposed another scheme with 54 units of different standards at the north of Municipality.

- There was another proposal for the construction of sports complex near Rajbari. Proposals have been made to develop the low lying areas along river Karala, and to construct social forest and a tourist lodge on the higher parts in the middle of low-lying areas.
- Some mini programmes for the town were undertaken by S.J.D.A since 1980, i.e., improvements of roads, construction of community hall, protection works along river Karala, improvement of burning ghat, improvement of Dinbazar, etc.
- A new bus terminus at Mashkalaibari has been suggested in the O.D.P. For the traffic management with in the town circular city bus service was suggested, with a bus terminus near Jalpaiguri town station.

8.2 IMPACT OF THE IMPLICATION OF STRATEGIES

Numerous problems of different magnitude are found in Jalpaiguri town in the forms of congestion, acute shortage of housing, traffic congestion, inadequate medical facility, incompatible uses and misuse of lands and lack of other urban facilities. In order to solve these problems different plans are proposed by S.J.D.A and other departments. But the Plan i.e. O.D.P was time consuming and expensive too, as these schemes require many years for its successful implication in the town. So, due to the absence of proper short-term schemes for the development of individual sector and the incomplete implication of earlier strategies the condition of Jalpaiguri town has improved a little.

The development plans for the town and it's adjacent areas are carried out partly, and some of the proposals could not implemented in the town due to various technical and other reasons. Most of the plans were cost oriented, so these were not carried out untill their completion. To compensate the earlier plans O.D.P was formulated to develop the town and its adjoining areas. The main objective of this plan was to accommodate more people in future. Along with this the main thrust was given on the development of roads, market places, and other civic amenities. But unfortunately the governments have not accepted the O.D.P of Jalpaiguri town. After the

formation of S.J.D.A some small plans were adopted to improve the main roads, protection work along river Karala etc, those are not sufficient for the town.

The growth of population during 1981-1991 decade was so high (799.85%) that, it crossed the estimated population (69,460 persons) in this decade. Requirement of land for residential purpose was also needed to accommodate the growing population in the future. Regarding this state government's proposal for rented housing complex with a capacity of 212 housing units for their employees was successfully implemented at Racecourse area of the town. But the other proposal for housing at the Kharia Mauza was not started in this time. So, the plan was not succeeded to solve the problem of shortage of housing in the town. During this time slum emerged as a major problem in the town, which needed long term schemes. It was assumed that 60% of the total increase of population would settle in near by Kharia Mauza. It was also estimated that, the requirement of land for residential purpose would be 18 hectares by 2001, with an additional land of 23.28 hectares in Kharia Mauza. The demand for additional housing units in Jalpaiguri town was estimated 2091 for the year 2001. Some small schemes have been taken to solve the housing problem in slums in the town.

To solve the problems related transportation, a new terminus for buses playing from Jalpaiguri towards Siliguri or Haldibari was suggested at Mashkalaibari in the O.D.P, which is not implied till now. Another bus terminus was suggested at Paharpur Mauza for those buses are originating from Maynaguri or further east will touch this terminus. This proposal was dropped due to some reasons. There was a proposal for providing road-signaling system by electrically operated device was not started during this period.

The proposed industrial belt near Rani Nagar Railway Station was started with the setting up of 33 KVA line running from Siliguri to Mahit Nagar Power Station. This area would have accommodation for more than 1000 industrial units in future. The proposed residential area near this for the workers was not started.

P.H.E department was constructed 9 overhead tanks with an increasing supply capacity of 4-lakh gallon/day in 1981. The municipality provided house connections in the town. A few water

stand posts were installed in different parts of the town. The number of beds in Sadar Hospital was increased, but not sufficient for the growing population. A number of new primary schools were raised during 1982-1991. The scheme of drainage development was started with out following organized and scientific measures, and as a result it was stopped before completion. Waste materials those are collected from the town started to dump at Punga Fakira Para, 9 km apart from the town. The over all study of earlier proposals and their implication in the town reveals that, beside having so many promises for the development of the town and its adjacent areas, these plans failed to achieve success. The town also suffers due to the absence of proper master plans for its development.

8.3 RECENT PLANS

The earlier plans could not implemented successfully in the town due to many reasons. Several developmental proposals were made for individual sectors; those can be implemented within a short period. These plans are mostly the Annual Plans, having an in- built system for implementation, and consist of target to be achieved, design and specification of project, including tender document for implementation and found flow. Some plans are designed in two phases (Phase I & Phase II) for the consequent years on the basis of requirement for those particular plans.

8.3.1 Annual Plans (Before 2000)

After 1995, the town expanded with an added area of 2.695 km², which occupied the proposed residential areas at the northwest and south of the town. Several programmes are adopted for its development. Under the Urban Poverty Alleviation scheme the budgetary allocations have increased for poverty eradication. Low cost housing was provided for slum people in Dhara Patti, Kustha Asram, Subhash Unnayan Palli area. Under the drainage scheme one-line channel was constructed from Racecourse through Panda Para, which disposed off to river Gadadhar. The construction of hostel building for Sunity Bala Sadar Girls School and other was completed under the executive agency like Zilla Parishad. Pharmacy Institute was constructed in 1999. Construction of the new building of Students Health Home was also completed at the beginning of 2000. To initiate the drainage plan a contour survey was sanctioned this time. The

construction of proposed sports complex near Rajbari was completed. Renovation of roads in different areas was started during this time.

8.3.2 Annual Plans (After 2000)

Some basic principles are followed to develop the town and to solve the existing problems in the town.

- All the development areas are tried to integrated and allowed to expand in an orderly manner.
- Importance has given to the natural resource based industries like cane, tea etc.
- Improvement of road condition with special importance to the Bus Terminus with in the town.
- Importance was also given to improve the living condition of the slum people along with the development of new urban areas at the northwestern part of the town.
- Water logging, and drainage congestion, waste management, recreational facilities are given more important in the recent proposals.

8.3.2.i Planning For Slums

Low Income group housing scheme has been initiated in the town. Slum improvement consists of the installation of basic sewer, provision of water stand post, community sanitary latrines, or low cost latrines etc. Proposal has made to construct a community hall at Harijan Basti (Ward no. 12), which is not started. Construction of community sanitary latrine and urinal for female at Harijan Basti is completed during 2003-2004. Construction of cemented pathway at Harijan Basti is also completed during this period.

8.3.2.ii Planning Related Trade, Commerce And Administrative Units

Proposal of Tea Auction Centre was made and executed with in 2003, and it's infrastructural development is still going on. For the construction of new building for Whole Sale Co-operative Society Ltd. fund has released and C.E.O. Jalpaiguri, Wholesale Co-operative Society, executed the scheme. The work is completed. Implication of GIS development for administrative purpose (Phase I) has already completed and phase II is in progress. Administrative building complex (Jalpaiguri Collectorate Building) was constructed and further renovated to accommodate

various administrative units. There is a proposal for the betterment of infrastructural condition of the main commercial area at Dinbazar in future. Proposals are made for the development of infrastructure of High Court Bench at Jalpaiguri.

8.3.2.iii Planning Related Roads And Traffics

For improving the congestion along the major thoroughfares, the removal of encroachment was carried out from the last few years, which are still going on. Proposal for widening of roads are already adopted. Improvement of roads by constructing guard walls, (ward no. 1, 8 etc.) and repairing of roads in Natun Para, Panda Para, Station Feeder Road, Kadamtala, Santi Para. Collectorated road are already in progress. Construction of road divider from Kadamtala More to Old Fire Station, from Head Post Office More to Babu Para More and up to Rahutbari Road, up-to Club Road, at the front of Zilla Parishad are already completed. The proposal for providing electronic road signaling system was initiated at Kadamtala, Head Post Office More and Beguntary More and near Dinbazar. A new bus terminus initiated near Kadamtala for buses playing between Jalpaiguri and Siliguri and Jalpaiguri bound Siliguri – Haldibari buses. This helps to remove the congestion at Kadamtala More. Municipal authority provided shades at the major bus stops in the towns i.e. in front of Zilla Parishad and F.D.I school, near A.C.College.



Plate 15 Electronic Road Signaling System at Din Bazar More

8.3.2.iv Proposals For Education

In the field of education several proposals are made and implemented to develop the infrastructure of secondary and H.S schools in the town. Initiative has been taken to construct and renovate school buildings in Suniti Bala Sadar Girls', Zilla School, Begam Faizannessa

Balika Vidyalaya and others and for the up gradation of laboratory in the institute of Pharmacy to start Degree Course. Sarba Siksha Abhijan is carried on to increase the participation rate by children and prevent school dropout at primary level.

8.3.2.v *Proposals For Health*

S.J.D.A promote the construction of Rehabilitation center (DCRPD building) near Sadar Hospital during 2002-2003. Fund has released to develop the infrastructural development of Sadar Hospital, which is not started. Six-bedded Intensive Therapeutic unit in Sadar Hospital will start in near future. Proposals are also made to construct a separate ward for infectious diseases in Sadar Hospital will start in near future. Proposals for the development of Students Health Home by purchasing of X-Ray Machine, Computer, other equipments have already implemented by Zilla Parishad in 2002.

8.3.2.vi *Proposals For Drainage Development*

Jalpaiguri town has been experiencing recurring water logging hazard, which need proper action. Flood Protection Scheme for Jalpaiguri town including re-excavation of Gadadhar Canal was implemented by EEI and W.D. Jalpaiguri in 2002. Proposals are made for drainage development (Drainage scheme phase I & II) in the town. Proposals are made to construct high drains in waterlogged areas of the town.

8.3.2.vii *Proposals For Waste Management*

The town generates 1050-2000 metric tones of solid waste and about 1200 lit. liquid waste as septic tank sludge in every month, which need proper disposal. Jalpaiguri Municipal authority has proposed for a new disposal site in Itbhata near Rakhal Devi. 7out of 25 wards, those are generating higher amount of wastes were selected by the municipal authority for separating the biological and non-biological wastes. This plan started to imply during 2006-2007 financial year.

8.3.2.viii *Other Proposals*

Proposals for installation of 63 KV new substation transformer near U.U.P (Uttar Bangya Unnayan Parshad) office for quality power supply to the new Administrative building of Collectorate and adjacent govt. offices in the town. The SJDA have already completed the

construction of electric crematorium at Mashkalaibari Burning Ghat within 2001-2002. Proposal was made for the construction of Netaji Subhash Cultural complex near Subhash Setu by S.J.D.A. Initiative has been taken to improve the play ground and other infrastructure of Jalpaiguri sports complex (Phase I and II). Jalpaiguri Municipal authority has completed excavation of pond near Jalpaiguri High School. There is a proposal for social forestry along river Karala under tourism infrastructure Development in the town. Development of infrastructure of several clubs, auditoriums and gymnasiums in the town are going on. Construction of R.C.C. reservoir at Panda Para with a capacity of 1.82 lakh litter will be completed within a few months.



Plate 16 Electronic Crematorium at Maskalaibari Burning Ghat

8.3.3. Perspective Plans

Perspective Plan – 2025, For Siliguri-Jalpaiguri Planning Area included 1266.66 km², out of which 70.29 km² is of Jalpaiguri (u) occupied by Jalpaiguri ODP area. Many strategies are taken to promote the traditional artisans involved in Bamboo work, woodcraft, cane works etc. Re-activating some of the basic objectives as laid out under urban services of the poor programmed (1986), aimed at improvement of the health of women as started by the government of India and reduction of the levels of malnutrition. Proposal for the creation of green buffer along the river edges, which is susceptible to erosion, is going to be started in future. The area along river Karala near Circuit House has been chosen for the programme of River Front Development. Where a buffer of minimum 50 metres should be reserved, and 100 metres along less developed

area, for the future recreational development. A proposal is made for 'Micro Zonation' in the town in terms of population loads, discharge routes, and impact areas. Estimation of sewage generation based on the existing and proposed water supply, drainage and sewerage conditions. Proposals for declaration of environment sensitive zones in the town SJDA proposed a guideline for operating 'Public-Private-Partnership' (PPP) scheme for infrastructural development.

Perspective Plans (5 years) under Planning Authority of Jalpaiguri, proposed a bunch of developmental plans for the town. Special emphasis is given on awareness campaigns and social mobilization for the prevention of STD/HIV/AIDS, along with NGO's and civil societies. Proposals are also made for the effective implementation of 'Swajal Dhara' schemes to accelerates the supply of safe drinking water at rural area and fringe area of the town. Initiative has been taken to promote Millennium Development goals (MDG), which states ensure that all boys, and girls complete a full course of primary schooling with in 2015.

The Uttarbanga Unnayan Parshad (UUP) has been set up a couple of years back to address the special problems of North Bengal as well as Jalpaiguri town. UUP is preparing a master plan for Jalpaiguri town for its future development.

CONCLUSION-

The over all study reveals that, the town suffered from various problems in the past, due to the absence of proper planning and effective implementation of previous plans. An overall effective plan was introduced through O.D.P in the town, which recommended a new commercial, industrial and administrative area in the town. For the first time this plan recommended a comprehensive drainage scheme to check the waterlogging problem in the town, which was not executed properly. Due to the rapid growth of population in the town natural waterways were encroached and converted to residential areas without paying any attention to the sewerage and storm water disposal system. As a result a perennial problem of water logging was finally deep rooted on the townscape of Jalpaiguri municipality, which need scientific and appropriate plans. Since 1980, the S.J.D.A recommended several proposals to solve the problem of congestion waste disposal, absence of protection work along river Karala etc. Different infrastructure development was also suggested by S.J.D.A. But some proposals are dropped out, some are not

implemented efficiently, and the fact is that the main attention was given to the development of Siliguri. As a result the condition of Jalpaiguri improved a little. At present many short term plans for individual sector are implemented by the municipal authority, Zilla parishad, Planning authority of Jalpaiguri, Uttarbanga Unnayan Parishad and S.J.D.A. Considering the population of the town, it can be said that, there is a only scope for redistribution of population in future by including Pahar Pur and Kharia Mauza within the municipal boundary. Due to the absence of industries in the town a little scope has been generated by the secondary activities. Proposed industrial belt at Rani Nagar could not flourished due to lack of financial and other assistance by the government.

Some long term perspective Plans are developed and going to be implemented in future, included different sectoral plans, regarding education, health, and other infrastructure facilities. Recently (22 Sept, 2007) SJDA proposed for an I.T Park near Assam More, and sanctioned fund of 50 lakh for the development of slum areas of the town, which is quite hopeful for the town dwellers. To conclude it can be said that the town has potentiality to develop and needs a 'Master Plan' for it's all round development in near future.

CHAPTER – IX

SUGGESTED DEVELOPMENT PLANS AND CONCLUSION

Jalpaiguri, the divisional headquarters has a very slow rate of growth. Among the 8 towns of North Bengal, Jalpaiguri ranked 2nd in 1901, and became 1st in 1951. After that the town has lost its position and dropped to the 7th rank in 1981. The rapid increase of population acts as the main constrain in achieving the desired economic and social progress in the town. Being an urban center Jalpaiguri failed to provide enough civic amenities to the people and enable to open a new horizon of development.

The uneven distribution of urban facilities is responsible for the dispersal of development and the quality of life of the people, which is also responsible for various problems in the town. Development policies for the town are concerned with a wide range of problems such as continuous increase of population, shortage of housing, growth of slum housing, traffic problems, deterioration of urban environment etc. The increased population has lead to the growth of more labour force, mainly in informal sectors and increased the problem of unemployment, as the town has no industries except some small scale cottage industries, which need less number of workers.

The previous chapter shows that the earlier developmental strategies for the town had not been executed properly so, very little development was made in this town. So, to meet the goals of urban development policy, there is a need for powerful planning instruments. Considering the present problems of the town, some new strategies are suggested in this chapter.

9.1 SUGGESTIONS FOR DEMOGRAPHIC PROBLEM

The continuous growth of population aggravate the problem of housing in the town. The density of population is high in the central part i.e. Natun Para, Mohanta Para Panda Para etc. and very high is found in slums situated in Tinpara, Bhatia Building, Badam basti area. The occupancy rate of houses has been increased due to scarcity of land holding and high price of land. The

houses are made very close to each other, so that the full utilization of land could be made, which lead congestion and lack of fresh air.

- i. The municipal authority should strictly follow the housing rule while sanction the house construction plans.
- ii. Government should provide an affective housing scheme at the north and Western fringe of the town.
- iii. Construction of Multistoried residential flats should be encouraged in wards situated at the fringe and well connected with the C.B.D.
- iv. The existing facilities like schools, medical facilities, Banks, supply of drinking water and other facilities should be distributed in these newly developed residential areas.
- v. Some vacant plots can be converted into residential plots in a planned way.

9.1.1 Suggestions For Slum Development

According to municipal report (2001), 30 slum pockets comprising 7474 slum population are found in the town, which need improvement schemes. The urban agenda proposed several measures for poverty alleviation.

- i. There is a need for an effective implementation of National Housing Policy (NHP) in the town. It is necessary to have a target for constructing houses for labourers and slum dwellers.
- ii. In 1995 Prime Minister Integrated Urban Poverty Eradication Programm (PMIUPEP) was launched to focus on the services and schemes pretaining to social, economic and infrastructure development for improvement of the quality of life of urban poor. This programme should be launch to solve the problems relating slums in the town.
- iii. Low cost housing schemes are required to solve the housing problems of the poor, specially the slum dwellers.
- iv. Innovative initiatives by construction department should be taken to popularize the use of low cost-effective building materials.
- v. Swarna Jayanti Shahari Rozgar Yojna (SJSRY) has been implemented in the cities and experimentally this programme can be applied in the town, to increase the employment opportunities among slum people.

- vi. For the infrastructure development Public-Private Partnership can be promote by the Municipality.
- vii. 'Self-help' concept should be promoted in the town.
- viii. Houses in different localities of different occupational structure should be constructed for the systematic redistribution of formal and informal labourers, and to remove the slums like *Badam basti, Tinpara from the main commercial areas of Dinbazar.*
- ix. The budgetary allocation for 'Basti Unnayan Prokolpo by the municipality should have considerable coverage in future.
- x. Roads and pavements should be constructed to improve the condition.
- xi. Slums require pucca drain for sewage disposal.
- xii. Construction of community latrine and ring well should be promoted in a large scale by the municipal authority.

9.2 SUGGESTIONS FOR INFRASTRUCTURAL DEVELOPMENT

9.2.1 Education Facility

In Jalpaiguri town literates are high in respect of total population in central and southern part of the town, where wards are of residential in nature. Large numbers of educational institutions are found here. But the entire eastern part of river Karala is neglected than the western part.

- i. For both secondary and higher secondary schools the number of institutions is not sufficient to accommodate increased eligible students in future, so, to minimize the spatial gap between schools, a number of both primary and secondary schools are to be initiated in Pilkhana, Walkarganj, Rajbari Para area and at least 3 Junior High School should be established in Bamun Para, Arabindra Nagar, Netaji Para area. These new schools should serve at least 1 k.m around them, where the accessibility and convenience to the children are maximum.
- ii. The functional gap between institutions should be filled up by setting up new schools of higher level or to convert lower order schools to higher order.
- iii. As the number of students at college level has been increasing every year, one higher educational institute (college) is to be established to cope up with present and future need.

- iv. A considerable amount of land should be earmarked for a residential hostel for the students of Commerce College and Law College in a suitable place in the town.
- v. Gender gap in higher education should be reduced.
- vi. Some schools need play ground with in their premises.
- vii. In all primary schools supply of safe drinking water and sanitary facility should be initiated.
- viii. In order to enforce compulsory primary education, dropout rate must be reduced.
- ix. Adult education and awareness programme about education should be initiated through mass communication media.

9.2.2 Medical Facility

The existing medical services in the town are insufficient with the only are existing hospital. As the Sadar Hospital is situated unscientifically, most of the people of the town have to cover 3 to 4 k.m distance to get medical facility. Some suggestions can be made to solve the problems associated with the medical facility of the town.

- i. To minimize the spatial gap another health service center should be installed either in southern or western part of the town.
- ii. Number of doctors, nurses in the Sadar Hospital is very few to serve the huge population of the town, which needs immediate recruitment of doctors and nurses.
- iii. It is very common to found that two or more patients in the general ward are sharing one bed, which aggravates the spread of contamination of diseases among the patients. So the number of beds should be increased.
- iv. The Sadar Hospital is lactant of modern equipments, and diagnostic facility, which need to provide very soon.
- v. The hospital should have at least two ambulances of its own.
- vi. Separate wards should be open for infections diseases in the hospital.
- vii. A rehabilitation center should be established with in the premises of Sadar Hospital.
- viii. The infrastructure of Sadar Hospital should be improved, along with improvement of water supply, and sanitation.

- ix. Hospital should take initiative in implementing family planning programme in free of cost among the poor.
- x. Intensive awareness campaigns are needed for the prevention of un-curable diseases like AIDS, and social mobilization for Leprosy patients.

9.2.3 Market Facility

To flourish the commercial activities in Jalpaiguri town the following suggestions are recommended.

- i. The main commercial activities are concentrated in the central and mid southern part of the town, and the entire western part, northeastern part have no daily markets. So, to minimize the travel distance between the existing markets at least four (4) daily markets have to be initiated at Walkaganj (Northern Part), Sen Para (Eastern Part), Pilkhana (South Eastern Part), NewTown Para (Western Part) for easy accessibility and quick service.
- ii. A new wholesale market should be initiated along the Jalpaiguri Maynaguri Road, which is well connected with the State highway and through which vegetable, rice etc are supplied from the neighboring areas to the town.
- iii. Arrangements of proper drainage in each market and lavatory facilities must be made.
- iv. All existing markets need concrete shade, road, and drinking water facility.
- v. Dinbazar suffers from proper storage facility, lack of parking space. To, solve this problem Dinbazar is to be converted into a multistoried market complex in which the ground floor may be used for godown and car parking purpose.
- vi. Salling of vegetable and other articles on the footpaths should be restricted.
- vii. Every market is proposed to redevelop the area and provide proper loading and unloading facilities.

9.2.4 Proposals For New Industries

The town has some small-scale industries, those are suffering from shortage of space and capital investment so, some proposals can be made to develop these small-scale industries and to open new industries around the town.

- i. Some of the agricultural lands and vacant lands along the state highway near Paharpur may be converted into an industrial area based on local raw materials. This proposed area has advantageous site, lying away from the town but well connected by road and near by rail station.
- ii. Food processing units and other agro based industries and forest based industries may be initiated in this proposed industrial area.
- iii. Fertilizer, Plastic, Electronics, Chemical and metal industries, transport industries are to be proposed for future industrial estates.
- iv. Sufficient supply of power and water are recommended for development of the industrial units of Jalpaiguri town.
- v. Some special subsidies, raw materials allocation priorities for availability of loans are recommended for development of the proposed industrial units.

9.2.5 Proposals For Transport Facility

For the development of the town, some proposals are made to solve the existing problem related transport facility.

- i. Road condition can be improved by widening the main roads and lanes. Repairing of culverts and road surface along station feeder road, Mohanta Para, New town Para should be undertaken by the respective authorities.
- ii. Maintenance of roads, streets, and bus stands should be improved. Garbage, construction waste, debris should be removed from the road regularly, which will be helpful to check the possibilities of road accidents specially during power cut
- iii. Properly designed shades for buses and passengers, waiting room, lavatory facility are proposed to provide in all bus terminus of the town.
- iv. A new bus stand should be constructed at Jalpaiguri Haldibari highway for the buses playing between Jalpaiguri and Haldibari.
- v. In the town, a truck stand is suggested at Netaji Para, which get the advantage to connect the town with State Highway (SH12).
- vi. Proper and adequate parking facilities for all types of vehicles are proposed to be provided near Dinbazar, Kadamtala and at the front of Sadar Hospital and schools i.e F.D.I, Central girls schools etc.

- vii. To improve the traffic congestion the removal of encroachment on the roads and footpaths along the Station Feeder Road, D.B.C Road, Merchant Road, Dinbazar road is suggested. This will do with minimum demolition work.
- viii. A new road to be constructed from 3 no. Ghoomti to Siliguri to minimize the pressure on Jalpaiguri-Siliguri by pass road, and to solve the congestion problem of 3 no. ghoomti.
- ix. The different railway level crossing should be provided, with flyover or under ground bridges to control the traffic jam at there points.
- x. Electrically operated road signaling system may be provided at 3 no. ghoomti railway gate, Santi Para etc.
- xi. Roadside plantations are proposed for beautification and environmental improvement along Race Course Road, Jalpaiguri – Chaulhati Road, Jalpaiguri-Siliguri Road etc.
- xii. To support the proposed programme of planning, operation and management of transport system in the town, there is need for organized urban transport information system.'

9.2.6 Proposals For Street Lighting Facility

- i. There is a need for more number of streetlights in the town. The municipal authority should take initiative to provide streetlights in the peripheral wards along with removal of disordered lamps.
- ii. The C.B.D area and the main business through fares are proposed to facilitate with more halogen lights to check the incidents of crime at the night.
- iii. New connections should be provide in the slum houses.
- iv. The services of the State Electricity Board is not satisfactory, which need initiatives at the government level to solve the problem of frequent power cut.

9.2.6 Proposals For Water Supply Facility

- i. A comprehensive piped water supply scheme may be initiative in the near future to fulfill the demand of drinking water in the town.
- ii. New overhead tanks are suggested to set at the southern part of the town.

- iii. The number of water stand post should be increased in Bhatakhana, SenPara, Dinbazar area.
- iv. Maintenance of stand posts and removal of broken tap should be done time to time by the municipal authority.
- v. Water of overhead tank is expected to purify by chlorination process regularly.

9.2.7 Proposals For Environmental Development

- i. Services efforts are needed to provide adequate sanitary facilities in the town. To make the living condition more healthier.
- ii. Environmental awareness has to be created among slum dwellers thorough education, or mass communication system.
- iii. Installation of low cost sanitation facilities, community latrines in the slum area.
- iv. Drains and roadsides should be cleaned regularly. The municipal authority should give priority to this.

9.2.7.i Proposals For Waste Management

- i. To avoid pollution of ground water systems, suitable sites for waste disposal have to be determined.
- ii. Number of septic tank sludge clearance should be increased.
- iii. Organic, inorganic and medical wastes should be collected separately.
- iv. Resources recovery plant may be installed at Panga Fakira Para dumping ground.
- v. Increase the number of laborers in this service and payment regularization should be taken under consideration.

9.2.8 Proposals For Drainage Development

Proper drainage and sewerage are the basic pre-requisites for healthy environment and as well as standard of living.

- i. Municipal authority has to be provided with a proper drainage and sewerage system.
- ii. Drains should be covered, which will decrease the risk of spreading diseases.
- iii. Proper sewerage system may be initiated in the slum areas of the town.

- iv. Illegal construction, which obstructed the easy flow of wastewater and surface runoff, should be removed.
- v. Drains are proposed to level according to the slope for easy flow of wastewater.
- vi. Constructions of high drains are proposed in waterlogged areas of the town.
- vii. Reconstruction of culvert near ghoomti no -4 is necessary to drain the excess water during the rainy season.
- viii. Scientific and appropriate plans are required to solve the problem of water logging in the town.

9.2.9 Proposals For Community Facility

- i. Parks are proposed to be provided near the residential area at the north, and at the extreme south, within every reach of the people of northern and southern part of the town.
- ii. The existing playground should be preserved and vacant spaces in the residential area will be converted into play fields with in the easy reach of every home.

9.2.9.i Redevelopment Of River Front

The area along river Karala near Circuit House has been chosen for the programme of 'River Front Development'. Some part of this area may be reserved for sanctuary for deer, and other small animals. Two social forests are initiated along the river side near Paresh Mitra Colony and Netaji para. (ward no – 25).

9.2.9.ii Other Recreational Places

Rajbari Deeghi may be converted into a place of aquatic sports. Near by location of Jalpaiguri sports complex and vacant places around it may be helpful to construct a sports village, which will have gymnasium, indoor stadium and other facilities with in its premises. Rowing facilities can be developed to attract the tourists in river Karala near Tista Uddyan.

Some potential tourism sports are noticed in are around the town, those needs proper planning and successful implementation Jalpaiguri Rajbari be developed as a Historic tourist

spot. The temple of Devi Chowdhurani have both religious and historic appeal. Do-Mohini can be developed as Eco-friendly tourist village in future.

9.3 Proposals For Effective Land Use

Jalpaiguri is an unplanned residential town.

- i. In the town some uses of lands are incompatible as public sectors, commercial sectors are developed scatteredly in the residential area of the town. These public and semipublic sectors specially government offices should be transfer to the Eastern part of the town where lands are denoted to this purpose.
- ii. There should be a separate commercial zone in the town.
- iii. Small-scale industries, workshops, publishing units may be transfer to the proposed industrial sector at the north of the town.
- iv. The land along the railway track is encroached by the slum people, which should be reclaimed for further expansion of railway line, and related uses.
- v. Schools those are situated at the commercial center, or along the main business through fare should be transferred in appropriate places.
- vi. To establish a compatible relationship between different land uses, mixed use of land may be restricted near C.B.D and Resident-cum-commercial houses should be converted only for commercial purpose.
- vii. A planned township may be developed at the extreme west along the Jalpaiguri-Siliguri highway by maintaining the norms of land use.

Jalpaiguri is a peaceful residential town, where is not much developed and is facing the problems of insufficient and uneven distribution of urban amenities. The municipal authority failed to promote the modern urban facilities to its residents. The present socio-economic condition has been discussed along with the identification of problems of the town. The high growth rate of population creates immense pressure on existing land, and other resources, which affects the urban environment and living standard of the people of the town. The job opportunity and the economic growth can be achieved through installation of industrial units in the outskirts. Jalpaiguri town has a potentiality to develop tourism, but needs proper planning and initiatives by the authorities. The morphology of the town has been changing, as old buildings are replaced

by new structure and rural land is converted to urban uses. Jalpaiguri town is expanding towards south and North Western directions. For the around development, the town needs proper planning and affective implementation of those plans. Along with this the residents of the town should take initiative in making the town economically efficient, socially equitable and environmentally sustainable in future.

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Appendix 1
Area And Population Of The Wards In 2001

Area in Km2	Total Population	Density/km2 in 2001	Population pressure	Male	Female
1.1092	5078	4578	0.592	2700	2378
1.9138	6778	3540	0.46	3457	3321
1.3084	5578	4262	0.551	2805	2772
0.2304	3994	17309	2.24	2082	1912
0.2226	3033	13620	1.761	1586	1447
0.243	3362	13831	1.79	1664	1698
0.1523	3136	13545	2.66	1573	1563
0.5859	3433	5845	0.76	1650	1793
0.5898	6186	10476	1.36	3135	3051
0.5976	4720	7899	1.021	2401	2319
0.6171	5074	8236	1.07	2618	2466
0.3437	4425	12871	1.67	2179	2246
0.4218	3255	7702	0.996	1627	1628
0.4453	4648	10437	1.35	2319	2329
0.3164	3103	9794	1.27	1539	1564
0.207	3431	16574	2.144	1711	1720
0.289	3513	12155	1.572	1738	1775
0.1758	2478	14095	1.823	1180	1298
0.3592	4306	11996	1.551	2129	2177
0.5898	3287	5566	0.72	1633	1654
0.496	3250	6546	0.85	1652	1598
0.2656	2753	10395	1.344	1406	1347
0.2187	2639	12066	1.561	1343	1296
0.3437	4082	11873	1.54	2044	2039
0.9257	4796	5175	0.67	2457	2339

Appendix II

Ward-Wise density of population in 1991 and growth of population in 1981-91

Ward No	Area in km ²	Density/Km ² in 1991	Population of		Growth of Population %
			1981	1991	
I	0.80	4741	3275	3793	15.82
II	1.38	3095	3749	4272	13.95
III	0.87	3920	2499	3411	36.49
IV	1.66	3750	2316	2475	6.41
V	1.05	6105	5127	6411	25.04
VI	0.28	10939	2885	3063	6.17
VII	0.59	7716	4167	4553	9.26
VIII	0.28	9300	2439	2604	6.77
IX	0.20	11040	2313	2208	-4.54
X	0.23	13895	2970	3196	7.61
XI	0.13	18138	2251	2358	4.75
XII	0.97	6485	4954	6291	26.99
XII	0.13	15138	1956	1968	0.61
XIV	0.13	19546	2726	2541	-6.79
XV	0.36	10944	3422	3940	15.14
XVI	0.23	13504	3136	3106	-0.96
XVII	0.36	8252	2951	2971	0.68
XVIII	0.69	6085	2699	4199	13.52
XIX	0.74	7259	4891	5375	9.83

Appendix III

Ward Wise Distribution of S.C & S.T Population In 2001

Ward No.	S.C Population	% of S.C	S.T Population	Population of S.T	% of S.T
1	1785	35.15	130	130	2.56
2	2326	34.32	44	44	0.65
3	1262	22.62	40	40	0.72
4	331	8.29	7	7	0.18
5	300	9.89	3	3	0.09
6	249	7.41	0	0	
7	428	13.65	3	3	0.09
8	329	9.58	34	34	0.99
9	2446	39.54	163	163	2.64
10	529	11.21	303	303	6.42
11	943	18.55	25	25	0.49
12	2096	47.37	20	20	0.45
13	411	12.63	5	5	0.15
14	1117	24.03	2	2	0.04
15	628	20.56	41	41	1.32
16	903	26.31	10	10	0.29
17	371	10.56	2	2	0.06
18	52	2.1	0	0	
19	566	13.14	10	10	0.23
20	472	14.36	24	24	0.73
21	602	18.52	4	4	0.12
22	698	25.35	5	5	0.18
23	299	11.33	1	1	0.04
24	156	3.82	9	9	0.22
25	881	18.37	90	90	1.88

Appendix IV

Wardwise Distribution Of Educational Institutions And Students At Different Levels In Jalpaiguri Town.

Ward No.	No. Of Institutions	Types Of Institution		Total Students
		Primary School	Junior High+ High+ H.S	
1	5	417	-	417
2	6	557	241	798
3	6	413	1249	2362
4	2	261	-	261
5	7	481	2163	2644
6	7	645	1064	1709
7	4	332	694	1026
8	9	1772	2306	4078
9	3	441	-	441
10	2	109	-	109
11	3	293	849	1142
12	6	304	1075	1379
13	3	354	1128	1482
14	5	254	672	926
15	1	70	-	70
16	4	271	455	726
17	3	191	576	767
18	3	236	1463	1699
19	3	559	-	559
20	3	198	472	670
21	5	236	432	668
22	1	64	-	64
23	1	51	-	54
24	4	206	956	1162
25	2	146	-	146

Appendix V

Wardwise Distribution of Industries

No. of Units

Ward No.	Food	Stuff	Press/publishing	Garments	Chemicals	Wooden	Reparing	Of	Electrical	Construction	Miscellan
1	3		1	3	2				9	6	
2	3		2	4	2				3	9	
3	1		3	2	3				3	8	
4	6		5	3	2	3			11	2	
5	4		8		2				7	4	
6	4		5	1	6				3	5	
7	6		8	4	4	1			11	5	
8	3		5		1	1			5		
9	1		1								
10	1		1	3					4		
11	2			5	1					5	
12	3		3	1	2				3	4	
13	4		2	1					8	8	
14	2		2		3				2		
15	5		1	1	3	2			4	8	
16									1		
17	11		18	3		1			12	5	
18	1		4	2		1			4	15	
19	1		1	6	4	1				10	
20	3		1	3	1	0			1	3	
21	2		2	2	1	1				3	
22	4		1	3		2			2	1	
23	3		2	3	1					2	
24	3		3	4					2	10	
25	1		2	1	1	9			6	1	

1. Socio - Economic Survey of Jalpaiguri Town

Ward No:

No. of Family Members			No. of Adults		No. of Children	
Total	Male	Female	Male	Female	Male	Female

2. Population Composition

Cast			Religion		
Gen	S.C.	S.T.	Hindus	Muslims	Christian

3. Marital Status

Married	Unmarried	Widow	Widower
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4. Fertility Rates

Status	Age at Marriage	Age at 1 st issue	Int. bet issues	Age at last issue	No. of Children
M					
F					

5. Mortality Rate

	Men	Women	Children
Causes of Death			
Age of death			
Place of death			

6. Educational level

Literate		Illiterate		Primary		Secondary		H.S.		> H.S.	
M	F	M	F	M	F	M	F	M	F	M	F

7. Occupations

Types & No. of persons Part/ Full time	Govt. service	Private	Business	Industries	Contractor	Others	Labourers	Agriculture
Monthly income in Rs.								

8. Income

No of Earning Members		No of Dependents			
M	F	Adult Male	Adult Female	Children M	F

9. Residence Status :- Permanent / temporary if temporary

Year	Self/ Family	Same Status	Other status	Same District	Other District	Same country	Other country
Migration	New Job	Transfer	Marriage	Other	NO - M	F	Place

10. Ownership of land

Area in katha	Self	Joint	Partly joint	Rented/leased	Partly rented / leased
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11. Area in Katha

	<1	1 - 2	2 - 5	5 - 10	>10
Houses					
K. Garden					
Others					

12. Livestock

Type & Total No.	Supply of fodder	Place of grazing
Cow		
Goat		
Hen		
Pig		
Others		

13. Dairy products

Product	Life	Meal	Milk	Milk Product	
Quantity					
Personal use					
Marketing	Local market	Middle man	Town	Outside	Other wise

14. Expenditure Pattern

Type	Amount per month
Food	
Clothes	
Education	
Transportation	
Others	

15. Loans used to take

Purpose	NGO / Govt. / Private	Amount	Frequency	Nature of product
House construction				
Business				
Others				

16. Distance of Workplace & Mode of Transport

Distance	Place	Foot	Bicycle	Bus	Train
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House Type :-

Roof		Wall		Floor	
Pucca	Kuncha	Pucca	Kuncha	Pucca	Kuncha

17. Privy System :-

Toilet - Common / Private	Pucca / Kuncha
Bathroom - Common / Private	Pucca / Kuncha

18. Drinking Water :-

Municipality Water Supply
Well
Tube Well

19. Electricity Supply :- Yes / No.

Daily News Paper Reader :-

English	Bengali	Hindi
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20. Personal Vehicles :-

Bicycle	Scooter	Motor Cycle	Car	For Personal Use
Rickshaw	Van	Bus	Truck	For business purpose

21. Membership of Library / Club :-

22. Type of Fuels used :-

Kerosene	LPG	Fire Wood
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23. Other Indicators :- Refrigeration

T.V. Set
Washing Machine
Telephone
Computer
Calorie intake

Food Habit
Health