

Chapter-3

Research Setting

In a social science research of this kind, it is not possible to know and understand the data and draw the interpretation more accurately unless a fair understanding of the characteristics of the area and attitude of people is at command of the interpreter who intend to unveil an understanding of the implication and behavioral complexes of persons who live in the area under reference and form a representative part of the larger community. The socio demographic background of the respondents required to understand their behavioral complex.

The research was conducted in one of the most important district of West Bengal, i.e. jalpaiguri where whole municipality word i.e. 25 words were selected as a research area. This section deals with West Bengal and its agro-ecological region of West Bengal agriculture, importance of tourism and tea in West Bengal economy and brief overview of the whole jalpaiguri District.

A SHORT GLIMPSE ABOUT WEST BENGAL

Profile

The name of Bengal, or 'Bangla', is derived from the ancient kingdom of Vanga, or Banga. References to it occur in early Sanskrit literature, but its early history is obscure until the 3rd century BC, when it formed part of the extensive Mauryan Empire inherited by Aśoka. With the decline of Mauryan power, anarchy once more supervened.

Demographic Overview

West Bengal is situated on the eastern part of India, stretching from the Himalayas in the north to the Bay of Bengal in the south. The state has a total area of 88,752 square kilometers (34,267 sq mi). It is bounded by Sikkim and Bhutan on the north, by Nepal on the north-west, by Bangladesh and Assam on the east, by Bihar, Jharkhand and Orissa on the west and south-west and by Bay of Bengal on the south. This northern part of the state has a hilly region. The narrow Terai region separates this region from the plains, which in turn transitions into the Ganges delta towards the south. The Rarh region intervenes between the Ganges delta in the east and the western plateau and high lands. A small coastal region is on the extreme south, while the Sundarbans mangrove forests form geographical area at the Ganges delta.

1. GENERAL INFORMATION

Table 3: General information of West Bengal

Indicator		West Bengal
Geographical Area (Lakh Sq. Km)		0.88
Population	Total	91,347,736
	Male	46,927,389
	Female	44,420,347
Sex ratio		947
Population density		1029 per.km ²
Literacy Rate	Total	77.08%
	Male	82.67%
	Female	71.16%
No of Sub divisions		66
No of Municipalities		120
No of Municipal Corporation		6
No of Blocks		341
No of Mouza		40782
No of Police Stations		456
No of Gram Panchayats		3354
Inhabited Villages		37945

Source: (According to 2011 census)

West Bengal is located between 21⁰31' and 27⁰14' N latitude and 85⁰51' and 89⁰ E longitudes. It is flanked by the Bay of Bengal in the south, Sikkim on the north, Assam on the east and Jharkhand and Orissa on the west. It covers an area of 8.85 million ha, representing only 2.7% of the total area of the country. The State is divided into 19 administrative districts viz. Bankura, Birbhum, Burdwan, Kolkata, Cooch-Bihar, Darjeeling, Hooghly, Howrah, Jalpaiguri, Malda, Midnapore-East, Midnapore-West, Murshidabad, Nadia, North 24 Parganas, North Dinajpur, Purulia, South 24 Parganas and South Dinajpur. There are more than 341 Community

Development Blocks in West Bengal and around 3354 Gram Panchayats and more than 40,782 villages in West Bengal. It is the 4th largest state in terms of population having a total population of 91,347,736 and population density of 1,029 /km².

Economic Overview

The state has been experiencing a steady economic growth. When India has grown 6.48 percent, West Bengal has grown 6.55 percent as per CSO's report published on 18th August, 2012. GSDP growth in West Bengal was higher than the National Average for 2011-12. Growth rate in National Average of GDP at Current Prices in 2011-12 was 15.02%, while Growth Rate in GDP in West Bengal for the same period was 15.87%. Growth rate in National Average of GDP at Constant Prices in 2011-12 was 6.48%, while Growth Rate in GDP in West Bengal for the same period was 6.55%. Similarly, the growth rate in Per Capita Net Domestic Product at Current Prices for 2011-12 for West Bengal was 14.86% as against the National Average of 13.64% during the same period.

PRODUCTION BASE/RESOURCE MAPPING

Agriculture

The total production of agri-commodities (food grains, pulses, oil seeds etc) in 2011-12 stood at 16.29 Mn MT. In previous year this figure stood at 14.27 Mn MT. The State is situated comprise of high geographical diversity with six agro climatic zones. The Net sown area is 61% of total Geographic area against national average of 46%, the Gross cropped area exceeds 92

lakh hac with cropping intensity of 171%. Small and marginal farmers account for 92% of total farmer population and own 70% of net cultivated land. Irrigation covers 45% of net cropped area; however there is a high reliance on monsoons. West Bengal is the highest producer of vegetables in the country and seventh in the production of fruits. Horticultural crop covers 21% of net area. The state accounts for 8% of the total food grains produced in the nation. Paddy is the main crop in the State followed by Sugarcane, Wheat and oilseeds. The State ranks first in the production of Paddy.

Horticulture:

West Bengal is the largest producer of vegetables in the country and seventh largest producer of fruits. Horticultural crops cover 21% of net cultivable area in the state. West Bengal accounts for over 11.4% of all India production of Fruits & Vegetables and is the leading producer of cauliflower, brinjal, cabbage and pineapple, and the second largest producer of potato and litchi. The State is the second largest producer of potato and accounts for about 24 percent of production in the country. West Bengal ranks 8th in loose flower production & 1st in Cut flower production in the Country [Source: NHB Database, 2011 – 12]. Export of flowers including cut flowers from the State is valued at Rs. 19.74 crores against 14.29 lakh kgs of flowers during 2012-13. [Source: DGCIS (Dissemination), Govt. of India]

Table4: Land use pattern of West Bengal

Geographical area (million hectare)	8.86
Net cropped area (million hectare)	5.46
Gross cropped area (million hectare)	9.23
Irrigation Area(million hectare)	4.67
Cropping intensity (%)	165.34
Forest area (%)	13.72
Non agricultural use (%)	18.66
Barren and Uncultivable (%)	0.35
Permanent pastures and Grazing (%)	0.09
Trees and Groves (%)	0.88
Cultivable wasteland (%)	0.53
Fallow land (%)	0.34

Source- the official website of west Bengal

Physiography:

Greater part of the State (two-third of its total geographical area) consists of a flat or gently undulating alluvial plain with an elevation below 30 meters. The western part of the State consists of uplands where part of the crystalline rocks from Chotanagpur plateau of Jharkhand extends. The extreme north of the State is comprised of steep hilly area and is a part of the Himalayan mountain ranges. The flat alluvial plains begin from the foothills of the Himalayas and extend up to the Bay of Bengal. It is divided by the River Ganges into north and south plain lands. Plain lands are found in Siliguri sub-division of Darjeeling district and in the districts of Jalpaiguri, Coochbehar, North Dinajpur, South Dinajpur, Malda, Murshidabad, Nadia, North 24 Parganas, South 24 Parganas, Howrah, and Hooghly and in part of the districts of Burdwan, Midnapore, Birbhum and Bankura. Purba Medinipur District comprises of 4 Sub-Divisions namely

Tamluk, Haldia, Contai, and Egra. The geographical area of the district is 430140 lakh Ha. The district is surrounded by the Bay of Bengal and Balasore district of Orissa state in its South, Paschim Medinipur in its West, Howrah district in the North and South 24 Parganas in the East. Purba Medinipur district is mainly a land of agriculture and more than 80% of the total population is residing in the villages and the rural economy is based on Agriculture and Agro-based small industries.

CLIMATE OF THE STATE

In terms of the standard climate types, tropical climate viz. humid, sub humid, semi arid and arid occurs over different regions of the state. Its climate is very much influenced by monsoon rains which, in turn are of two types (I) south West monsoon during the rainy season and (II) north-east monsoon during the winter season. Rainfall in West averages about 1750mm, ranging from 2500 to 3500 mm in Dooars and Tarai regions to 1200 to 1800 mm in the plains. The maximum and minimum temperatures recorded during March to October are 30-40 °C and 16-26 °C respectively in the plains while in the hills these are 15-20 °C.

Map of West Bengal



Map1 West Bengal

PROFILE OF THE DISTRICT

General Characteristics of the District:

The district of Jalpaiguri occupies a prime position in the domain of North Bengal. It stretches over an area of 6227 sq. kms (Census, 1991) and has its headquarters in Jalpaiguri. The economy is chiefly agrarian although the industrial belt is gradually attempting to expand its periphery. The sprawling tea gardens of the Dooars area constitute the chief asset of this district. Other major agrarian products of the district like jute, paddy, potato, etc. also make a significant contribution to the district's revenue pool. Forest resources of the district constitute another major resource of the district.

Location & Geographical Area

The district enjoys a strategically important location as it serves as a corridor of trade and communication with the various north-eastern States of India. It stretches between the gridlines $26^{\circ}15'47''\text{N}$ to $26^{\circ}59'34''\text{N}$ latitude and $88^{\circ}23'2''\text{E}$ and $89^{\circ}7'30''\text{E}$ longitude. It touches the boundaries of Bhutan and Darjeeling in the north, Assam (Goalpara) in the east, Coochbihar in the south and Bangladesh in the south-west. The district topography wears a mixed look – consisting both of hilly areas and undulating plains coupled with vast flat plains. Three district physiographic units can be identified in the district:

- (a) The northern hilly terrain which is a part of the sub-Himalayan Ranges,
- (b) The sub-mountain central tract, locally called Bhabar and
- (c) The gently sloping alluvial plain in the south locally called Terai.

Topography

The soil in this region ranges from alluvial soil to sandy and clayey soil. The soil can be broadly classified under two heads – **a)** the terai soils covering almost the entire district and **b)** the brown forest soil covering the northern foot hills of the district. However, the soil is predominantly sandy and hence porous with low water holding capacity. The alluvial soil is fertile enough for crops like paddy, jute and tea to be grown. This kind of soil is brought down by hilly rivers like Teesta, Torsa and Mahananda. The rivers often overflow their banks depositing layers of fertile soil on the banks on either side. In the upper region to the north of the Duars, the soil is mainly hard, black and clayey. This soil is suitable for growing tea which is a major cash crop of this region. In the lower plain land the soil consists of a mixture of both clay and sand. India is said to be a land of rivers and the district of Jalpaiguri bears enough proof of this statement. There is a network of rivers criss-crossing the entire region. The major ones are Teesta, Torsa, Mahananda, Jaldhaka, Kaljani, Raidak, Korotowa and Sonkos. These are joined by smaller streams like Galandi, Dudua, Tasati, Mujnai and their likes. The rivers are in full spate during the monsoon season and navigation along them becomes risky. Agricultural activity in the district is largely dependent on the various irrigation projects which have been built on these rivers.

Ancient History of Jalpaiguri:

The people of Jalpaiguri are blessed with a long history. The area then also included the regions of neighbouring Coochbehar, Assam and the Rangpur

district which is at present in Bangladesh. We can find the mention of Jalpaiguri in the Mahabharata which occurred during the 10th century B.C. King Bhagadutta, ruler of Pragjyotish or today's western Assam, joined the Kaurava side in the epic battle of the Kurukshetra with his Chinese and Kirat soldiers. It is depicted in the Mahabharat that King Bhagadutta ruled over vast region stretched from the Brahmaputra River within Assam to Eastern Nepal along the Himalayan foothills. His daughter Bhanumati was the wife of the eldest Kaurava, Prince Duryodhana. The Kirats are actually an off-shoot of Tibeto-Burman speaking Bodo group of tribes originating from Tibeto-Mongoloid races and nowadays called Meches and the other aboriginal people of the district, like the Rajbanshis and the Koches of the past. According to Professor Suniti Kumar Chattopadhyay, Koches too were one of the Bodo tribes. The country named Pragjyotish and the Kirat people find mention in many other ancient texts such as the Ramayan, Harivansha, Brahmandapuran, Raghuvansa etc. and the Greek work Periplus of the Erythraean Sea of the 1st century AD. But no reference to the land and people of the present Jalpaiguri is available till about the 7th century AD. The findings through several rock inscription from different parts of the district shows the presence of great rulers of India like Shasanka or the ruler of Gauda who was responsible for unifying Bengal, and BhaskarVarman who was the best known ruler of Gupta dynasty. Medieval History of Jalpaiguri: As we know, the medieval period of Bengal.

Table5: Demographic and physiological overview of Jalpaiguri

SL.NO	PARTICULAR	JALPAIGURI
1	Area(sq.km)	6227
2	Population	3,872,846
	Male	1,983,064
	Female	1,889,782
3	Schedule caste	1,458,278
	Male	750,841
	Female	707,437
4	Schedule Tribe	731,704
	Male	365,868
	Female	365,836
5	Density of population(per sq km)	622
6	No. of households	866,379
7	Sex Ratio(Female/1000Male)	953
8	Latitude	26 ⁰ 15'47" & 26 ⁰ 59'34"N
9	Longitude	88 ⁰ 23'2" & 89 ⁰ 7'30"E
10	Total no of Agricultural labours	349,672
11	Temperature	37.9 ⁰ (max), 7.8 ⁰ (min)
12	Annual rainfall	2548.8mm
12	Literacy%	74
13	Small and Marginal farmers	121680(Marginal), 27482(Small)
14	Net cropped area	198256ha.
15	Percentage of irrigated area to cultivated area	40
16	Total no of cold storage	26
17	Area brought under HYV seeds	60%
18	Household cottage industries	37500
19	Number of Forest villages	29
20	Number of inhabited villages	404
21	Total no. of cultivators	113290
22	Total number of size of holding	270769
	a. Less than 1ha	197812
	b. Between 1&2 ha	49573

	c. Above 2ha	23384
23	Net irrigated area	79593ha
	Irrigation by canals	43320ha
	Irrigation by wells	573ha
	By other sources	35700
24	Number of allied agro activities	9800

Source: The official website of west Bengal

Table 6: Administrative set up of Jalpaiguri

Country	India
State	West Bengal
Headquarters	Jalpaiguri
Lok Sabha constituencies	Mekliganj, Dhupguri, Maynaguri, Malbazar, Kranti, Jalpaiguri, Rajganj
Assembly seats	Mekliganj, Dhupguri, Maynaguri, Jalpaiguri, Rajganj, Dhupguri-Phulbari, Malbazar
No. of Sub-Divisions	2
No. of Municipalities	3
No. of PHCs	26
No. of Blocks	7
No. of Police Stations	9
No. of Gram Panchayats	80
No. of Mouzas	418
No. of Gram Sansads	1177

Table7: General information about Mal Sub-Division

Sub Division	Block	Police station	Municipality	Gram Panchayat
Malbazar	3	2	1	22

Source: The official website of west Bengal (<http://www.jalpaiguri.gov.in>)

Table8: General information about Jalpaiguri Sadar Sub-Division

Sub Division	Block	Police station	Municipality	Gram Panchayat
Jalpaiguri	4	5	2	58

Source: The official website of west Bengal (<http://www.jalpaiguri.gov.in>)

Climate of Jalpaiguri district

Jalpaiguri is part of monsoon climate zone of South-Eastern Asia. May is the hottest month of this region with average maximum temperature of about 32 °C whereas January is coldest with 11 °C. Highest ever recorded maximum and minimum temperature are 40 °C and 2 °C. The average annual humidity in the district is of 82%. The annual average rainfall is 3160mm. December is the driest month with average rainfall 0.2 mm and July is wettest with 809.3 mm. Number of rainy days are 0 to 1 during November to February and 24 days during July. Thunderstorms are common weather phenomenon during May.

Soil Condition

The next groups of soils which grow paddy are the tarai soil. They are derived from the mountain of the Himalayas. These soils are brought down by the hilly rivers, the Tista, The Mahananda, The Torsa, The Jaldaka and numerous tributaries which bring material from height of above 10000ft and deposit it about 200 to 300ft above sea level. The deposits are mostly sandy and of raw humus type and are deep black to grey black in colour. They occupy a good amount of paddy areas of Jalpaiguri, Darjeeling and Cooch Behar districts. These soils are very light in texture and highly porous. Due to rain precipitation becoming greater than the rate of infiltration through these soils, the area gets water logged as a result of which aman paddy can be grown. Due to severe leaching by rain and presence of a good amount of organic matter, soil of this district is acidic in nature. The ph ranges from

4.7 to 5.8 and are poor in bases and available plant nutrient. A combination of nitrogen and phosphate has been found to increase the yield of paddy.

Communication system of Jalpaiguri Town

The main communication with this town with the neighbouring areas is by road and by rail. The airways communication is available from Siliguri (Bagdogra Airport). There are three numbers bus stand including one number NBSTC buses and they are situated in the centre region of the town. The central bus stand situated at Kadamtala and is communicating mainly with siliguri and the other two stands are doing the same with Duars areas, other district and Kolkata. The railway station station at Jalpaiguri road is available for long distance communications where as the town station is meant for mainly with the communication with Siliguri town.

AGRICULTURAL PROFILE OF THE DISTRICT

Table 9: Agro-climatic/ecological zone of Jalpaiguri

Agro Ecological Sub Region(ICAR)	Assam And Bengal Plain, Hot Sub humid To Humid (Inclusion Of Perhumid) Eco-Region. Eastern Himalayas, Warm Per humid Eco-Region
Agro-Climatic Zone (Planning Commission)	Eastern Himalayan Region (II) Lower Gangetic Plain Region (III)
Agro Climatic Zone (NARP)	Terai Zone (WB-2) New Alluvial Zone (WB-4)
List all the districts or part thereof falling under the NARP Zone	Jalpaiguri, Siliguri sub division, Cooch Behar, Malda, Murshidabad, Nadia, Uttar dinajpur

Name and address of the concerned ZRS/ ZARS/ RARS/ RRS/ RRTTS	Regional Research Sub-Station (Terai Zone), UBKV, Khoribari, Darjeeling- 734427
Mention the KVK located in the district	Ramsai , Jalpaiguri district-

Table10: Land use pattern of Jalpaiguri district

Land use pattern of the district	Area('000ha)
Geographical area	622.7
Cultivable area	351.74
Forest area	179.0
Land under Non-agricultural use	83.5
Cultivable wasteland	0.1

Source: The official website of west Bengal (<http://www.jalpaiguri.gov.in>)

Table11: Major soil of Jalpaiguri

Major soils	Area('000ha)	Percent(%) of total geographical area
Shallow to moderately coarse loam soil	268.028	43.04
Deep to very deep clay loamy soils	121.486	19.05
Deep to very deep clayey soil	195.461	31.38

Source: The official website of west Bengal (<http://www.jalpaiguri.gov.in>)

Table12: Irrigation Facility of Jalpaiguri

Irrigation	Area('000ha)
Net irrigation area	87.7
Gross irrigated area	2343
Rainfed area	242.1

Source: The official website of west Bengal (<http://www.jalpaiguri.gov.in>)

Table13: Agricultural land use of Jalpaiguri District

Agricultural land use	Area('000ha)	Cropping intensity%
Net sown area	335.7	142
Area sown more than once	140.7	
Gross cropped area	476.4	

Source: The official website of west Bengal (<http://www.jalpaiguri.gov.in>)

Table 14: Agriculture support Facilities of Jalpaiguri District

Seed Depots	35
Fertilizer Depots	778
Pesticides	403
Rural Market	165
Rural Godown/ Ware houses	11
Cold storage	26

Source: The official website of west Bengal (<http://www.jalpaiguri.gov.in>)

Table 15: Production and Productivity of some major Agricultural crop of Jalpaiguri

Crop	Production('000tn)	Productivity(kg/ha)
Paddy	470.8	9526
Potato	348.6	27864
Wheat	31.8	2550
Rape seed and Mustard	4.8	768
Jute	505.1	2114
Maize	22.5	2315

Source: The official website of west Bengal (<http://www.jalpaiguri.gov.in>)

Table 16: Area under some Horticultural crop of Jalpaiguri District

Crop	Area('000ha)
Tomato	0.1
Cauliflower	3.1
Brinjal	2.4
Cabbage	3.3
Cucumber	0.1
pumpkin	0.5

Source: The official website of west Bengal (<http://www.jalpaiguri.gov.in>)

Table 17: Area under some Horticultural Crop (Fruit) of Jalpaiguri

Horticultural Crop(fruit)	Area('000ha)
Pine apple	0.1
Banana	0.1
Jack fruit	0.1
Areca nut	0.1
Ginger & Turmeric	0.1

Source- The official website of west Bengal (<http://www.jalpaiguri.gov.in>)

Table 18: Total Number of Livestock of Jalpaiguri District

Livestock	Total number
Non descriptive Cattle (local low yielding)	921.5
Crossbred cattle	94.4
Non descriptive Buffaloes (local low yielding)	11.4
Goat	98.3
Sheep	4.5
Others (Camel, Pig, Yak etc.)	1,663.2
Poultry	2,50,740

Source: The official website of west Bengal (<http://www.jalpaiguri.gov.in>)

ISSUES/ CHALLENGES EMERGING OUT IN DIFFERENT SECTOR OF THE DISTRICT

Agricultural Sector

1. Huge gap in productivity for most of the field crops due to traditional agriculture
2. Relatively less cropping intensity
3. Less cropped area under irrigation with low water use efficiency and poor Infrastructure
4. Lack of farm mechanization
5. Poor crop diversification

6. Less use of organics and bio fertilizers.
7. Inherent soil and climatic problem
8. Small size of holding
9. Natural flood during monsoon
10. High prices of agricultural inputs
11. Lack of small scale entrepreneurship

HORTICULTURAL SECTOR

1. Lack of organized food processing unit
2. Lack of multipurpose cold storage and godowns for post harvest management of fruits, vegetables and flowers
3. Lack of awareness about high value vegetable and off season cultivation
4. Occasional glut of vegetables
5. Less reliability in planting material and technical support

SERICULTURE SECTOR

1. Lack of realization about the potentiality of sericulture
2. Absence of cocoon market and uncertainty in price because the selling of cocoon entirely depends of traders of Malda/Murshidabad, who regulate the price.

ANIMAL RESOURCE DEVELOPMENT

1. Poor animal health, nutrition and immunization
2. Poor milk and egg production
3. Predominance of Non-descriptive cattle
4. Unorganized green fodder cultivation

5. Poor reproductive and hygiene management

DEPARTMENT OF MARKETING

1. Lack of organized market and well defined supply chain
2. Trans border effect
3. Poor milk marketing and under utilization of chilling plant

DEPARTMENT OF AGRICULTURAL CREDIT

1. Poor infrastructure with low investment in agriculture and allied sector
2. Poor bank linkage for agricultural credit.
3. Less crop insurance and subsidy coverage

EXTENSION SERVICE

1. Lack of updated knowledge, skill and motivation of farming community
2. Inadequate extension service
3. Research-Extension-Application gap

SPECIAL PROJECTS / PROGRAMMES ON-GOING IN THE DISTRICT

Major on-going programmes being implemented in the district are as under:-

- Integrated Schemes for Oilseeds, Pulses and Maize(ISOPOM)
- Integrated Cereal Development Program(ICDP)
- Integrated Pest Management(IPM)
- Soil Health Management Scheme
- Crop Diversification Programmer

- Participation of Women in Agriculture
- Demonstration Hybrid Paddy
- Mahatma Gandhi National Rural Employment Guarantee Act(MGNREGA)
- Agricultural Technology Management Agency(ATMA)
- Kanyashree Project

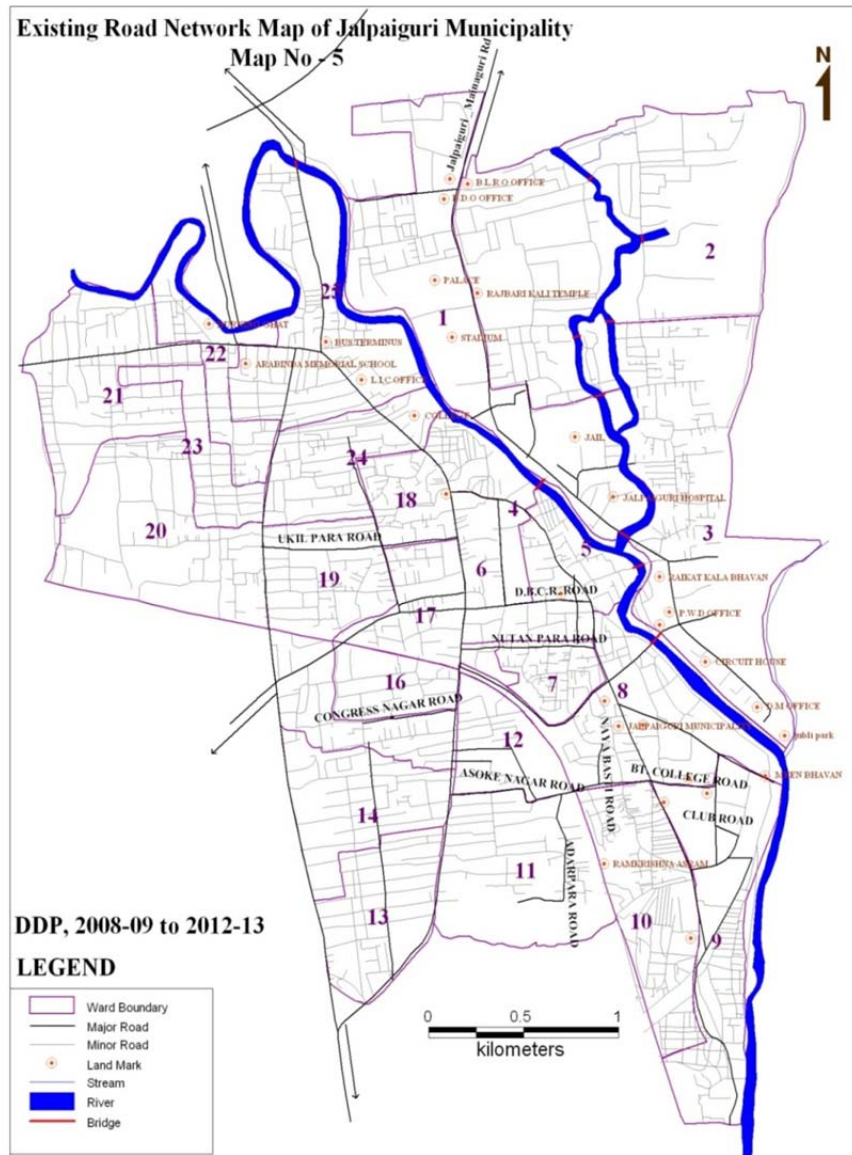
JALPAIGURI DISTRICT MAP





Map2: Jalpaiguri district

JALPAIGURI MUNICIPALITY WARD MAP (STUDY AREA)



Map 3: Jalpaiguri municipality Ward map