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Photographs captured during field survey

Plate No.1

Plate No. 2

Plate No. 3

Plate No. 4

Appendix I

PH. D FIELD SURVEY

Tuhin Dey Roy
Under the supervision
of
Dr. Arindam Basak (Associate Professor)
University of North Bengal

Name of the Village	
Name of the head of the household	
Religion	
Caste	
Total number of family members	

Household Data

Name	Age	Sex	Education	Occupation	Income	Marital Status
1						
2						
3						
4						
5						
6						
7						
8						

Total number of working members	Main workers	Marginal workers	Non-workers

Monthly Household Expenditure

Food	Clothing	Fuel	Education	Health	Electricity	Transportation	Recreation

Type of house	kutcha	pucca	Semi pucca
Building materials used	Floor:	Roof:	Wall:
Type of toilet	Indian	English	
Number of rooms			
Availability of separate kitchen			
Source of drinking water			
Distance from drinking water facility			

Drainage facility								
Electricity facility								
Fuel used for cooking								
Access to public distribution system								
Possession of government health card and banking facility.								
Possession of household assets	Radio	Television	Room heater	Geyser	Mobile / telephone	Computer	Two wheeler	Four wheeler

Interactions								
Economic Interaction								
Type	Member of the household							
Financial								
Employment								
Trade & Commerce								
Daily Shopping								
Agricultural Interaction								
Type	Member of the household							
Grains								
Fruits								
Dairy Products								
Agricultural Inputs								
Machinery								
Educational Interaction								
Type	Member of the household							
Primary Education								
Secondary Education								
H.S Education								
Higher & Technical Education								
Tution and Coaching								
Educational Stationery								
Health Interaction								
Type	Member of the household							
OPD Service								
Diagnostic Service								
Hospitalization								
Vaccination								
Medicine Procurement								
Interaction for Entertainment								
Type	Member of the household							
Shopping								

Eating out								
Movies								
Festival and Fairs								
Shopping for high value goods								
Administrative and Organizational Interaction								
Type	Member of the household							
Office visit								
Court Visit								

Frequency of visit
1. Daily
2. 3-4 times per week
3. 1-2 times per week
4. 1-2 times per month
5.1-2 times per 6 months
6. 1-2 times per year
7. Never visited.

Appendix II

Zone I

Size class classification	Name	Population	No. of household	10 % household	Household surveyed
<200	Champasari Chhat	96	15	1.5= 1	10
	Ruhini Chhat	98	17	1.7=2	10
	Salbari Chhat Pratham Khanda	107	21	2.1=2	10
200-499	Fulbari Pataner Chhat	234	50	5	10
	Kamala barir Chhat	264	57	5.7=6	10
	Purba Karai Barir chhat	314	68	6.8=7	10
500-999	Lalsara Chhat	551	108	10.8=11	11
	Ujanu	660	164	16.4=16	16
	Dumriguri Chhat	950	207	20.7=21	21
1000-1999	Sisabari	1085	214	21.4=21	21
	Karaibari	1183	237	23.7=24	24
	Putimari	1217	244	24.4=24	24
2000-4999	Rajpairi	2018	414	41.4=41	41
	Bhujia Banir Chhat	2248	473	47.3=47	47
	Bara Pathuram	2728	591	59.1=59	59
5000-9999	Liusipukuri	5185	1063	106.3=106	106
	Mahishmari	6010	1275	127.5=128	128
	Kauakhali	6615	1526	152.6=153	153
10000>	-				

Zone II

Size class classification	Name	Population	No. of household	10 % household	Household surveyed
<200	Tharu Bhita	89	20	2.0=2	10
	Gangaram Maler Chhat	109	24	2.4=2	10
	Bairbhita	111	26	2.6=3	10
200-499	Grammanir Chhat	340	69	6.9=7	10
	Sivok Hill Forest	321	76	7.6=8	10
	Grammani	476	96	9.6=10	10
500-999	Dalkajhar Forest	512	102	10.2=10	10
	Bhelu	564	108	10.8=11	11

	Dhemaler Chhar	644	145	14.5=15	15
1000-1999	Siubar	1052	193	19.3=19	19
	Dandrajhar	1050	217	21.7=22	22
	Chamtaguri Chhat	1267	266	26.6=27	27
2000-4999	Trihana Tea Garden	2016	404	40.4=40	40
	Jogibhita	2221	452	45.2=45	45
	Hetmuri	2124	464	46.4=46	46
5000-9999	Uttar Bansgaon Kismat	5064	1086	108.6=109	109
	Madhya Bansgaon	9132	1843	184.3=184	184
	-				
10000>	Pashchim Madati	13523	2705	270.5=271	271

Zone III

Size class classification	Name	Population	No. of household	10 % household	Household surveyed
<200	Tukriajhar Forest	89	20	2.0=2	10
	Dhakna Gachh	184	34	3.4=3	10
	Fulbarir Chhat	171	35	3.5=4	10
200-499	Madan	236	53	5.3=5	10
	Nazir	313	64	6.4=6	10
	Dudha	379	75	7.5=8	10
500-999	Jamatulla	506	110	11.0=11	11
	Singbhita	536	114	11.4=11	11
	Chhota Paikpara Arazi	763	144	14.4=14	14
1000-1999	Chunilal	1192	217	21.7=22	22
	Subalbhita	1022	218	21.8=22	22
	Naksalbari	1618	357	35.7=36	36
2000-4999	Debiganja	2042	423	42.3=42	42
	Chayansing	2158	444	44.4=44	44
	Dayaram	3182	696	69.6=70	70
5000-9999	Mandila Jhar	6642	1313	131.3=131	131
	Bara Paikpara Arazi	6899	1492	149.2=149	149
	Uttar Ramdhan	6892	1505	150.5=151	151
10000>	Lahugaon	12710	2534	253.4=253	253

Appendix III

Transport network analysis

Vertices (v)	50
Edges (e)	68
Total Route length (M) in km	266.46

	Formula	Value	in %
Alpha Index	(e-v+p)/(2v-5)	0.2	20
Beta Index	e/v	1.36	
Gamma Index	e/3(v-2)	0.47222222	47.2222222
Cyclomatic Number	e-v+p	19	
Spatial Structure of Network	(e-v+p)/(√v-1)²		
	e-v+p	19	
	√v	7.07106781	
	(√v-1)	6.07106781	
	(√v-1)²	36.8578644	
	(e-v+p)/(√v-1)²	0.51549378	
	Grid Pattern or Structure		
Diameter	14		
Eta Index	M/e	3.91852941	
Theta Index	M/v	5.3292	
Pi Index	M/Diameter	19.0328571	

Nodes	Connectivity Index	Shimble Index	Associated Number	OID
1	1	452	14	1
2	2	404	13	2
3	2	358	12	3
4	3	314	11	4
5	3	280	10	5
6	3	298	11	6
7	3	261	10	7
8	3	290	11	8
9	3	238	9	9
10	3	298	12	10
11	4	293	11	11
12	3	317	12	12
13	4	271	11	13
14	2	273	10	14
15	4	239	9	15

16	3	218	10	16
17	3	224	9	17
18	2	227	8	18
19	3	220	8	19
20	2	272	10	20
21	2	265	10	21
22	3	209	9	22
23	3	203	9	23
24	4	199	8	24
25	2	364	13	25
26	3	338	12	26
27	2	283	10	27
28	2	252	13	28
29	3	224	9	29
30	4	259	10	30
31	3	272	11	31
32	3	280	11	32
33	3	244	10	33
34	3	242	9	34
35	2	273	12	35
36	3	269	12	36
37	3	297	13	37
38	1	335	13	38
39	2	297	13	39
40	3	306	13	40
41	2	306	13	41
42	2	279	11	42
43	2	239	10	43
44	3	265	11	44
45	3	295	12	45
46	4	284	12	46
47	2	328	13	47
48	2	372	14	48
49	2	383	14	49
50	2	339	13	50

Calculation for transport network analysis

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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4	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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12	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
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Calculation for transport network analysis

Nodes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	Shimble Index	Associated Number
1	0	1	2	3	4	4	5	6	5	7	8	7	8	9	9	10	6	7	8	9	10	9	9	8	8	9	10	13	9	10	11	11	10	9	12	12	13	13	13	13	12	11	10	11	12	12	13	14	14	13	452	14
2	1	0	1	2	3	3	4	5	4	6	7	6	7	8	8	9	5	6	7	8	9	8	8	7	7	8	9	12	8	9	10	10	9	8	11	11	12	12	12	12	11	10	9	10	11	11	12	13	13	12	404	13
3	2	1	0	1	2	2	3	4	3	5	6	5	6	7	7	8	4	5	6	7	8	7	7	6	6	7	8	11	7	8	9	9	8	7	10	10	11	11	11	11	10	9	8	9	10	10	11	12	12	11	358	12
4	3	2	1	0	1	1	2	3	2	4	5	4	5	6	6	7	3	4	5	6	7	6	6	5	5	6	7	10	6	7	8	8	7	6	9	9	10	10	10	10	9	8	7	8	9	9	10	11	11	10	314	11
5	4	3	2	1	0	1	2	3	1	4	5	4	5	6	6	3	2	3	4	5	6	5	5	4	5	6	7	5	5	6	7	7	6	7	8	8	9	9	9	10	8	7	6	7	8	8	9	10	10	9	280	10
6	4	3	2	1	1	0	1	2	2	3	4	3	4	5	5	4	3	4	5	6	7	6	6	5	4	5	6	6	6	7	8	7	7	8	7	9	10	10	10	10	9	8	7	8	9	9	10	11	11	10	298	11
7	5	4	3	2	2	1	0	1	1	2	3	2	3	4	4	3	2	3	4	5	6	5	5	4	3	4	5	5	5	6	7	7	6	7	6	8	9	9	9	9	8	7	6	7	8	8	9	10	10	9	261	10
8	6	5	4	3	3	2	1	0	2	1	2	1	2	3	3	4	3	4	5	6	7	6	6	5	2	3	4	6	6	7	8	8	7	8	7	9	9	10	10	10	9	8	7	8	9	9	10	11	11	10	290	11
9	5	4	3	2	1	2	1	2	0	3	4	4	4	4	3	2	1	2	3	4	5	4	4	3	4	5	6	4	4	5	6	6	5	6	7	7	7	8	8	8	7	6	5	6	7	7	8	9	9	8	238	9
10	7	6	5	4	4	3	2	1	3	0	1	2	1	2	2	3	4	5	6	7	8	7	5	4	3	2	3	5	5	6	7	7	6	7	8	8	8	9	9	11	10	9	8	9	10	10	11	12	12	11	298	12
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12	7	6	5	4	4	3	2	1	4	2	1	0	2	3	3	4	5	5	6	7	9	7	6	5	1	2	3	6	6	7	8	8	7	8	9	9	9	10	10	11	10	9	8	9	10	10	11	12	12	11	317	12
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38	13	12	11	10	9	10	9	10	8	9	9	10	8	8	7	6	7	8	7	10	7	6	6	5	11	10	8	4	5	3	2	3	4	3	4	2	1	0	3	4	5	6	7	6	6	5	6	7	8	7	335	13

39	13	12	11	10	9	10	9	10	8	9	9	10	8	8	7	6	7	7	6	7	6	5	6	5	11	10	8	6	4	5	3	4	3	2	3	1	2	3	0	1	2	3	4	3	3	2	3	4	5	4	297	13
40	13	12	11	10	10	10	9	10	8	11	10	11	9	9	8	7	8	6	5	6	5	4	5	6	12	11	9	7	5	6	4	5	4	3	4	2	3	4	1	0	1	2	3	2	2	1	2	3	4	3	306	13
41	12	11	10	9	8	9	8	9	7	10	10	10	9	8	7	8	7	5	4	5	4	3	4	7	13	12	10	8	6	6	5	6	5	4	5	3	4	5	2	1	0	1	2	3	3	2	3	4	5	4	306	13
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44	11	10	9	8	7	8	7	8	6	9	8	9	8	7	6	5	6	4	3	4	3	2	3	4	10	9	7	5	5	6	6	7	6	5	4	4	5	6	3	2	3	4	1	0	1	1	2	3	3	2	265	11
45	12	11	10	9	8	9	8	9	7	10	9	10	9	8	7	6	7	5	4	5	4	3	4	5	11	10	8	6	6	7	6	7	6	5	5	4	5	6	3	2	3	4	2	1	0	1	2	3	2	1	295	12
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	452	404	358	314	280	298	261	290	238	298	293	317	271	273	239	218	224	227	220	272	265	209	203	199	364	338	283	252	224	259	272	280	244	242	273	269	297	335	297	306	306	279	239	265	295	284	328	372	383	339		
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A Brief Discussion about history and geographical Background of the Siliguri Subdivision

[1]Tuhin Dey Roy and [2]Arindam Basak

[1]Research Scholar, Department of Geography and Applied Geography, University of North Bengal
[2]Associate Professor, Department of Geography and Applied Geography, University of North Bengal

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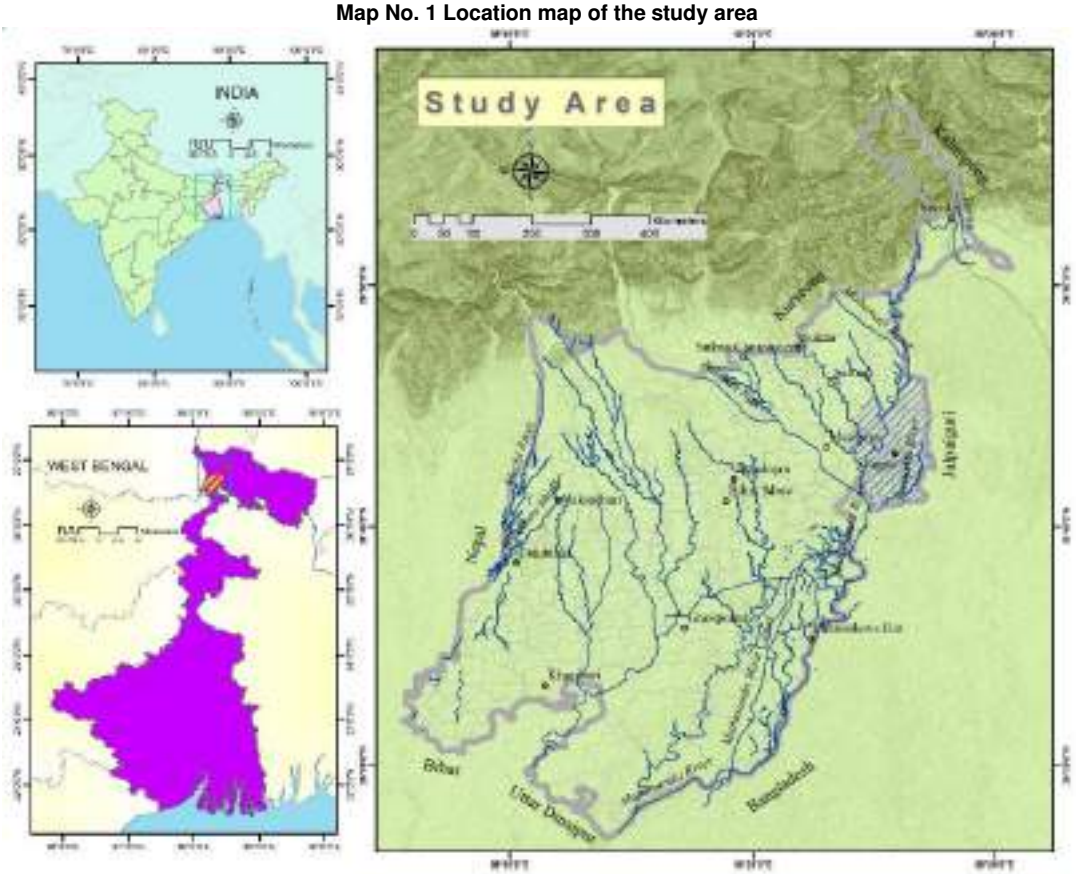
ABSTRACT

A geographical background of a region is very much an integral part of research. It helps to get an idea about the physiography, climate, geology, soil, drainage and natural vegetation which forms the mosaic of the physical background of the study area. In addition to these, brief history of this subdivision has also been dealt here in details. This will give a broad understanding of the geographical elements of Siliguri sub-division. Given this content each of these parameters has been discussed individually in the subsequent part.

Introduction

Siliguri sub-division, the study area is located at the base of Himalaya Mountain in the plain of the Darjeeling district. This subdivision is popularly known as 'Terai Land.' This region is also consider as 'Chicken neck corridor', a 'cartographic imprints of the British decolonization process is a terrifyingly vulnerable artery in India's Geography'. The latitudinal and longitudinal extension of the study area is $26^0 26' 50''$ N to $26^0 58' 00''$ N and $88^0 06' 13''$ E to $88^0 31' 03''$ E respectively. This area is represented by parts of the Survey of India (SOI) toposheet no. 78 B/1, 78 B/2, 78 B/3, 78 B/5. 78 B/6 and 78 B/9 on the scale of 1: 50,000. The geographical area is 819.61 sq. km consisting 4 C. D. Blocks, 22 Gram Panchayats, 14 Census Towns, 353 Villages and 1 Municipal Corporation under its administrative jurisdiction. This sub-division is bounded on the north by Kurseong sub-division and Kalimpong district, on south by Bihar, Uttar Dinajpur and Bangladesh, on east by Jalpaiguri district and on west by Nepal. In 2011 census, the total population of this region is 1189838 consisting 654617 urban population and 535221 rural population.

Map No. 1 Location map of the study area



Source: Prepared by the researcher

Brief history of Siliguri Subdivision

Documentation of the history of the study area is very limited. Siliguri's other name in Hunter's *Statistical Account of Bengal* was 'Sannyasikata'. In his books, Hunter made no mention of the term Siliguri. J.D. Hooker in his travelogue said that "Siligoree stands on the verge of the Terai, that low malarious belt which skirts the base of the Himalaya." The Baikunthapur Raikats were a subsidiary branch of the Cooch Behar royal family. A step brother of Maharaja Viswa Singha built a house adjacent to Siliguri during the reign of the region's first two kings, Viswa Singha and Naranarayan Raikat Siswasinhga. That region of the kingdom was given to him as "pet bhata" (appanage) in the middle of the sixteenth century. Accordingly, "His (Siswasinhga) capital was first built at Siliacguri (Siliguri) in the village of Debgram…..The capital was called 'Niz- Baikunthapur'. (Sanyal, 2002)" Darjeeling's history was first revealed in the 19th century, possibly as a result of the British Indian government's efforts to identify a Himalayan neighbouring region. The location was first mentioned in the Treaty of Titliya of 1816, which was signed by the kingdom of Sikkim and the British East India Company.

As a part of this agreement British government have to protect the frontier of Sikkim from invasion. In this regard two officers of British East India Company try to solve the frontier problem between Sikkim and Nepal in 1828. One of these officers, General Lloyd spent six days in Darjeeling and was attracted by its scenic beauty. Given the cold weather of Darjeeling, later he planned it as a location of health resort. After the approval of the court of directors, he was successful in obtaining the execution of a grant deed by the Raja of Sikkim on the 1st day of 1835. Thereafter the territory of Darjeeling was further expanded with the annexation of the terai. Thus, 1866 represents a turning point in the district's chronology. After Kalimpong was placed under British control, the district was divided into two subdivisions: the Terai sub-division, with a land area of 274 square miles, which included the entire country at the foot of the hills, and the headquarter sub-division, with a land area of 960 square miles, which included all the hills on both sides of the Teesta.

It was difficult to travel between the Darjeeling district and the plains prior to 1866 because there was only a small route, which still remains today and was constructed in 1841 and passes via Pankhabari. In order to facilitate wheeled travel from the hills to the plains, the current Hill Cart Road was built in 1861 (Hunter, 1876). Simultaneously, a different road connecting Siliguri to the northern part of the Ganga was built, which helped Siliguri gain notoriety. (O'Malley, 1907). From 1864 until 1880, the Terai sub-division's headquarters were located in Hanskhawa close to Phansidewa before being moved to Siliguri. The Eastern Bengal State Railway Company subsequently built the railway line connecting Sealdah (Calcutta) and Damukia Ghat, which is currently located in Bangladesh close to the bank of the river Padma. In 1878, it was extended farther from the other bank of the Padma River at a location known as Saraghat to Siliguri via Nator, Santahar, Parbatipur, and Jalpaiguri (all of which are now in Bangladesh except Jalpaiguri). As a result, this allowed for continuous rail service between Siliguri and Calcutta. Then, in 1926, this metre gauge line was converted to a broad gauge line. Darjeeling Himalayan Railways, a different railway line was built in 1881, connecting Siliguri to Darjeeling and increased the latter's significance.

In the Gazetteer of Darjeeling 1907, this place was declared by the authority as unhealthy and unhygienic and it was considered as a 'depot of malaria, typhoid' etc. In spite of these demerits, Siliguri was declared as a sub-divisional headquarters under Darjeeling district in 1907, thus re-establishing the Terai sub-division which had in 1891 been absorbed into the Kurseong sub-division. The population between 1907 and 1930 increased gradually but its overall development was not noteworthy, because till that time there was only one two-storied pukka (brick-built) building, which proves that 'Siliguri' though had by then a larger population, there had been little improvement in its performance. The establishment of schools and libraries between 1910 and 1930 was followed by the establishment of a club named the "Sporting Union" in 1920. Additionally, Siliguri has a strong history of the Swadeshi (Independence) movement, and Mahatma Gandhi addressed the people of Siliguri during his visit in 1925. After World War I, in 1919, transportation by modern vehicle began in Siliguri. Mr. Stephen, who had four motor cars and transported passengers to Darjeeling, utilized it for the first time. Each traveller paid Rs. 19 to get to Darjeeling. However, the Siliguri-Naxalbari route saw the beginning of the bus service for the Terai regions of Darjeeling in 1925. The first passenger bus was known as "Siliguri Motor Service." The bus's proprietor was Ganeshram Prasad and the first driver of the said bus was Md. Faridh.

When Siliguri's population reached about 7,000 people in 1931, it was officially recognized as a town for the first time by the Census of India. After that, this town's cultural life started to thrive, and in 1935 a movie was screened for the first time in the Mitra Sammilani Hall, which had originally opened in 1909 as the Bijalee Talkies and later changed its name to the Tripti Talkies. This town's cultural progress was further reflected in 1937 by the staging of a sizable number of traditional plays. Siliguri's population grew more quickly between 1931 and 1941, primarily as a result of the influx of immigrants from neighbouring districts in the south and nearby hills in the north.

According to the West Bengal Government's 29 April 1949 Gazette Notification, the Siliguri Municipality was created on May 24th, 1949, in accordance with the Bengal Municipal Act of 1932. It was first situated in a decrepit, one-story, little home with a tin roof owned by Mohammad Khudabox on the Hill Cart Road, directly across from the current Meghdoot Cinema Hall. The government appointed the first Chairman of the Municipality. By virtue of his position at the time, the S.D.O. served as the municipality's chairman. As a result, Sachindra Mohan Guha, the then S.D.O. of Siliguri, served as the first Chairman and Briendra Nath Roy Sarkar served as Vice-Chairman. Along with the aforementioned names, the State Government also nominated the following commissioners: Abanindranath Bhattacharjee, Pradut Kumar Basu, Bimal Kumar Mukhopadhay, Digendranath Roy Sarkar, Manturam Agarwala, Bindheawari Misra, Rampada Chattopadhaya, Dr. Khirodh Nath Chattopadhay, Dr. Gopal Chandra Ghosh and George Mahbert. The Chairman was formerly employed by the government, but this practise was ended in 1956. The "Poura Bhawan" was built near the Siliguri court in its current position

on October 26, 1952, with the foundation stone placed by the West Bengal governor in office at the time, Harendra Kumar Mukhopadhaya. Bireswas Majumdar gave the building its official opening on January 26, 1960. Jagadish Chandra Bhattacharya served as the new amendment act's first elected chairman. Thereafter, with the exception on a few occasions when an administrator served as chairman, the Siliguri Municipality's subsequent chairmen included Jiban Krishna Dutta, Krishnendra Narayan Choudhury, Swapan Kumar Sarkar, Asok Narayan Bhattacharya, and Bikash Ghosh. Though Siliguri was officially recognized as a town in 1931, but the local transportation was terrible. The municipality began licencing rickshaw pullers in 1952 and issued licences for 450 rickshaws. In 1951, the common people was first given access to power in this town through the Kurseong Hydro-Electric Power supply.

In the same year 1951, a college called "Siliguri College" was also established; up until 1971, it was the only college available to the people of Siliguri. After that, the Siliguri College of Commerce (1971) and the Siliguri Mahila Mahabidyalaya (1981) were established. After 1947, slum communities began to grow in and around Siliguri as a result of the massive influx of migrants from East Bengal (East Pakistan). During this time, the local market also began to expand as the flow of necessities expanded. The construction of the Siliguri railway junction in 1949 created a new pathway for direct communication with Bihar and the surrounding areas. The Siliguri Town Station is now connected via the pre-existing narrow gauge railway that ran along the Hill Cart Road thanks to the construction of Siliguri Junction station.

Due to the importance of the transport system during the war, the highways in and surrounding Siliguri were heavily utilized for the transportation of tanks and army vehicles during the 1962 Chinese invasion. For instance, the removal of the different stalls that were located on both sides of the Hill Cart Road significantly enlarged its width. Since then, there has been significant progress in roads, making Siliguri the main nodal point of the area. The Chinese incursion in 1962 brought the strategic importance of roads into the proper focus.

In the field of communication, the construction of the New Jalpaiguri Railway station in 1964 was a significant accomplishment. New Jalpaiguri railway station was connected to Siliguri Junction and Siliguri Town stations. The main reason for constructing the New Jalpaiguri Railway station was to establish a broad-gauge railroad line that would connect Siliguri and the surrounding areas with Calcutta. However, because the Farakka Barrage with road-cum-rai1 carriageways had not yet been built, the railway link between Siliguri and Calcutta was still going via Khejuria Ghat on the Ganga, which required using a boat to cross. Train communication between Siliguri and Calcutta became uninterrupted after the construction of Farakka Barrage in 1974. Notably, New Jalpaiguri became India's first railway station to feature all three gauges (i.e. broad, middle and narrow).

A political uprising over the language issue began in Assam in 1960, and as a result, a large number of Bengali population began moving to Siliguri and settling there. The Bangladesh War in 1971 caused a large influx of non-Muslim Bengalis, the majority of whom arrived in Siliguri and other North Bengal towns. Since the ULFA agitation in Assam began in 1980, there have been additional waves of migrants, including bengalis, some of whom have settled in Siliguri and the surrounding area, particularly in Dabgram, leading to a rapid increase in its population. Siliguri's population grew after 1985, increasing the town's population and significantly increasing its land value. Under the leadership of Swapan Kumar Sarkar, the foundation stone for the Kanchanjunga Krirangan was laid, which will replace Tilak Maidan. Thereafter some development plans were made, to construct a second rail gate beside Town Station and prepare the connecting roads and broadening of Kachari road, Station Feeder Road, Burdwan Road, Bidhan Road and Sevok Road. In addition, the Refugee Rehabilitation Department opened Bidhan Market, named after the former chief minister of West Bengal, Dr. Bidhan Chandra Roy, on a three-acre tract of land for the benefit of 800 refugee vendors, at a cost of more than Rs. 10,000,000.

In the mean time, Siliguri was officially given Municipal Corporation status by the West Bengal Assembly on May 12, 1990, replacing Municipality. Siliguri Municipal Corporation was created in 1994 when Siliguri Municipality was transformed into it (S.M.C). It should be remembered that Siliguri Municipal Corporation includes both Dabgram Census Town and Siliguri Municipality (21.80 sq. km). Mayor is being used instead of Chairmen as a nomenclature. As the first Mayor of the Siliguri Municipal Corporation, Bikash Ghosh was chosen, and he has since been followed by Munsi Nurul Islam, Asok Narayan Bhattacharya, and Goutam Deb. The Siliguri Municipality initially had 8 wards, which steadily increased to 19 in 1964, 30 in the late 1980s, and finally 47 in 1994 when it was upgraded to a Corporation.

However, the Siliguri Planning Organization (S.P.O) was established on June 13, 1964, by the West Bengal government's Development and Planning Department, fifteen years after the Siliguri Municipality was founded. The S.P.O. created an interim development plan for Siliguri in 1965 with the intention of determining the city's future land use pattern. However, over time, it became clear that S.P.O was unable to address the myriad urban issues that Siliguri was facing. This was because the town's territory had grown beyond the administrative boundaries of Siliguri Subdivision due to urbanization, and now extends into the neighbouring Jalpaiguri district. In accordance with the West Bengal Town and Country (Planning and Development) Act of 1979, the Siliguri Jalpaiguri Development Authority (S.J.D.A) was founded on April 1st, 1980. This recently established S.J.D.A absorbed the earlier S.P.O. In 1986, the S.J.D.A. created an outline development plan for the 260 sq. km. of the S.J.D.A region that encompassed the entire Siliguri Municipality, measuring 15.5 sq. km. at that time.

The Sino-Indian War of 1962 was one of the key elements leading to a drastic change of the entire Siliguri sub-division. Because of this, the Indian government had a distinct perspective on Siliguri in order to guarantee security for North-East India. A variety of military offices and divisions were established up for the purpose of ensuring national security. In addition to this, this area saw the establishment of numerous military camps and stations for members of the Indian Army, Air Force, B.S.F., and S.S.B. In accordance with this, a variety of development initiatives and financial aid were given, aiding in the growth of this region. But the most intriguing part of this dramatic transformation of the entire Siliguri sub-division within

a short period of time is that the entire transformation took place without any development of large-scale industry. It would seem, at least on the surface, that there is no production base for this region. This is mostly a one-centric commercial hub that serves the expanding needs of neighbouring nations like Bhutan, Nepal, Bangladesh and North East India. Siliguri really served as a pull factor for population movement. This led to emigration from Siliguri's rural districts and from neighbouring Jalpaiguri district. Many employees are employed in non-agricultural activities. Additionally, it is interesting to note that the four c.d. blocks (Matigara, Nakshalbari, Phansidewa, and Kharibari) of Siliguri sub-division are significantly distinct in character from Siliguri. This block contains the majority of the agricultural activities as well as other related activity.

Administrative Divisions

Administration wise Siliguri Municipal Corporation comes under two district, Darjeeling and Jalpaiguri. Geographically this municipal corporation is situated within latitude of 26°42'N to 26°56'N and the longitude of 88°20'E to 88°29'E. It has an average elevation of 122 metres. Siliguri Municipal Corporation under Darjeeling district has an area of 20.1 sq. km. It consists of 33 Wards (Ward No. 1 to 30 and Ward No. 45 to 47). Siliguri Municipal Corporation under Jalpaiguri District has an area of 21.8 sq. km. It consists of 14 Wards (Ward No. 31 to 44).

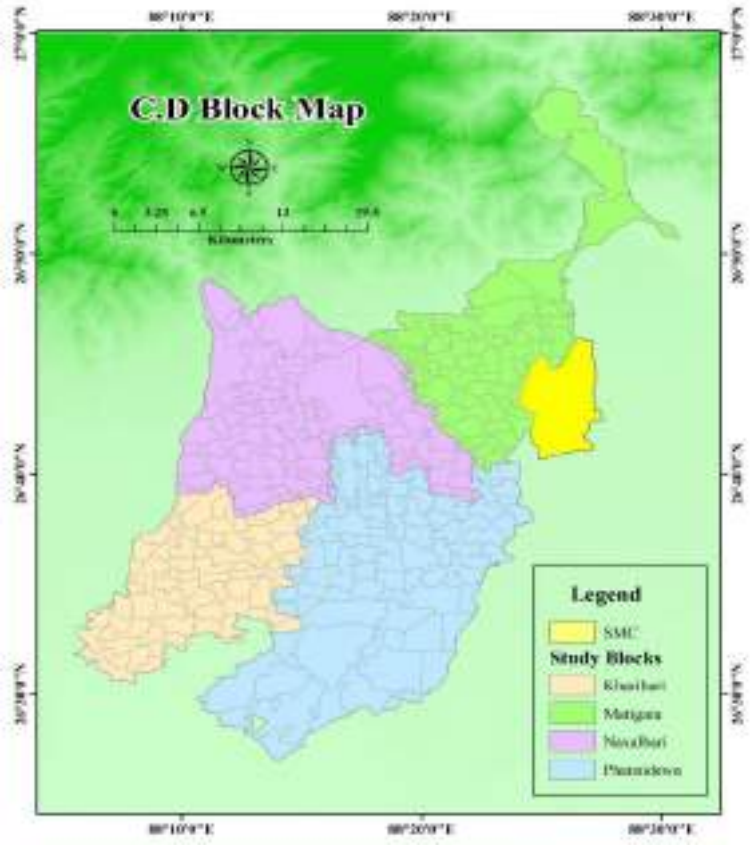
Matigara block is located between $26^0 40^{'}$ N to $26^0 57^{'}$ N and $88^0 17^{'}$ E to $88^0 30^{'}$ E respectively. It has an average elevation of 127 metres and an area of 132.61 sq. km. Of these, rural area is 120.62 sq. km and urban area is 11.98 sq. km. According to 2011 census it consists of six census towns, viz. Bairatisal, Tari, Jitu, Kalkut, Mathapari, Baramohonsingh and five gram panchayats, viz., Atharakhai, Matigara-I, Patharghata, Champasari, and Matigara-II.

Naxalbari block is located between $26^0 38^{'}$ N to $26^0 48^{'}$ N and $88^0 10^{'}$ to $88^0 22^{'}$ E respectively. It has an average elevation of 152 metres above sea level. This block occupies an area of about 188.12 sq. km. Of these, rural area is 173.67 sq. km and urban area is 14.45 Sq. km. According to census 2011 this block consists of six Census Towns, viz., Uttar Bagdogra, Lalman, Dakshin Bagdogra, Dumriguri, Geni, Bhimram and six gram panchayats, viz., Gossaipur, Lower Bagdogra, Naxalbari, Hatighisa, Moniram and Upper Bagdogra.

Phansidewa block is located between $26^0 26^{'}$ N to $26^0 41^{'}$ N and $88^0 14^{'}$ to $88^0 24^{'}$ E respectively. It has an average elevation of 98 metres above sea level having an area about 312.1 sq. km. According to census 2011 this block consists of rural areas only with seven gram panchayats, viz., Bidhannagar-I, Chathat-Bansgaon Kismat, Ghoshpukur, Jalas-Nizamtara, Bidhannagar- II, Phansidewa-Bansgaon Kismat and Hetmuri-Singhjhora.

Kharibari block is located between $26^0 30^{'}$ N to $26^0 39^{'}$ N and $88^0 08^{'}$ to $88^0 15^{'}$ E respectively. This block covers 144.88 sq. km. Of these, rural area is 140.83 sq. km. and urban area is 4.05 sq. km. According to census 2011 this block consists of two census towns, viz., Shyamdhan and Kharbari and four gram panchayats, viz., Binnabari, Buraganj, Kharibari-Panisali and Raniganj-Panisali.

Map No. 2 C.D. Block wise map of the study area



Source: Prepared by the researcher

Physical set-up of the study area

Siliguri sub-divisaion is part of an outlying hills of the lower Himalayas and a stretch of land along their base, known as Terai, a gently sloping land, partly covered with riverine deposits. The hills rise abruptly from the Terai plains and the elevation increases northward. The hilly part are fluvio-glacial deposits of the quaternary period, while most of the southern part consists of pleistocene to recent flood plain deposits. In the Terai plain due to sudden decease in slope, rivers appear in wide and shallow beds with carrying huge loads. The several physical attributes like physiography, slope, geology, drainage, climatic characteristics, soil, and natural vegetation of this region are described here.

Physiography

The Siliguri sub-division is bounded to the north by the high hills of the Lesser Himalayas and to the south by gentle alluvium, the majority of the study area is made up of unconsolidated material derived from the Himalayas and brought down by rivers that originate from these hills. The average surface elevations along the north-south axis is 350m and 30m above mean sea level, respectively. The area's general slope runs from north-east to south-west.

The cross-sections study show that there are a number of break-in-slopes, and the variation in slopes at different heights indicates that the area is undergoing tectonic activity. The study area is divided into three micro-divisions based on slopes, contours, and cross-sections, the nature of erosion, material composition, and drainage characteristics.

a) Structural Hills: A comparatively tiny northern portion of the study region, which is part of the Siwaliks formation, is forming hogbacks and cuestas with high relief and a rugged profile, as well as some structurally controlled drainage. The Siwalik's height is more than 260 metres above mean sea level. Headward erosion by the rivers in the Siwalik, scarp face and moderately steep slope in the higher part of the hills are significant features in the study area. The dip direction is toward the south-west and parallel to the topographical slope. The dip runs parallel to the topographical slope and faces south-west. As a result, the lower part of the hill has flat topography, while the higher part is heavily dissected by streams and rivers. The structure hills are densely forested.

b) Piedmont Plains: Long sloppy lands from the hills to the plain, known as piedmont plains, are formed by materials from the Siwalik and the Lesser Himalayas. It covers a large portion of the study area. The piedmont plain has been divided into two sections based on contour height, slope, and constituent material composition: (i) upper piedmont plain and (ii) lower piedmont plain.

i) Upper piedmont plain: Upper piedmont plain: This plain is a depression in the Lesser Himalayas and is made up of a variety of boulders, cobbles, pebbles, gravels, sands, silts, and clays. From north to south, its general height ranges from 200 to 260 m.

ii) Lower piedmont plain: This plain is made up of unconsolidated materials such as loose sands, gravels, silts, and clays. This plain's average elevation ranges from 120 to 200 metres, with a moderate to gentle slope to the south.

c) Terai Plains: Terai Plain is south of the piedmont plain and has a gentle southerly slope. The presence of a spring line, from which a number of springs originate, marks the junction of the Terai plain and the piedmont plain. This plain encompasses a large portion of the research area. The general elevation ranges from 40 to 120 metres above mean sea level. It is made up of sands, silts, clays, and some gravel and pebble beds that have been altered.

This micro-division has been further classified into two categories.

i) Plains: The plain is made up of alluvium deposited by the Mahananda, Balason, and Mechi rivers, as well as their tributaries. Sands, silts, and clays from rivers, with 'lenticular' deposition of gravels, make up the alluvium. There are a few prominent topographical features in this zone. The slope is generally north to south.

Physiographically this area could be divided into (a) upland plains of older alluvium and (b) low land plains of newer alluvium.

(a) Upland plain: The upland plains of older alluvium, which cover a large area, are not inundated during floods. It is heavily cultivated and primarily composed of sands, silts, and clays.

(b) Low land plain: It is situated adjacent to drainage lines and is prone to flooding during the rainy season each year, when fresh silt and loam of light colour are deposited. Following the floods, the soil becomes moist, and winter cultivation does not require any irrigation.

ii) Terraces: The terraces are classified according to their levels and origins. The stand over height ranges from 35 to 60 metres, and the slope is very gentle with a southerly orientation.

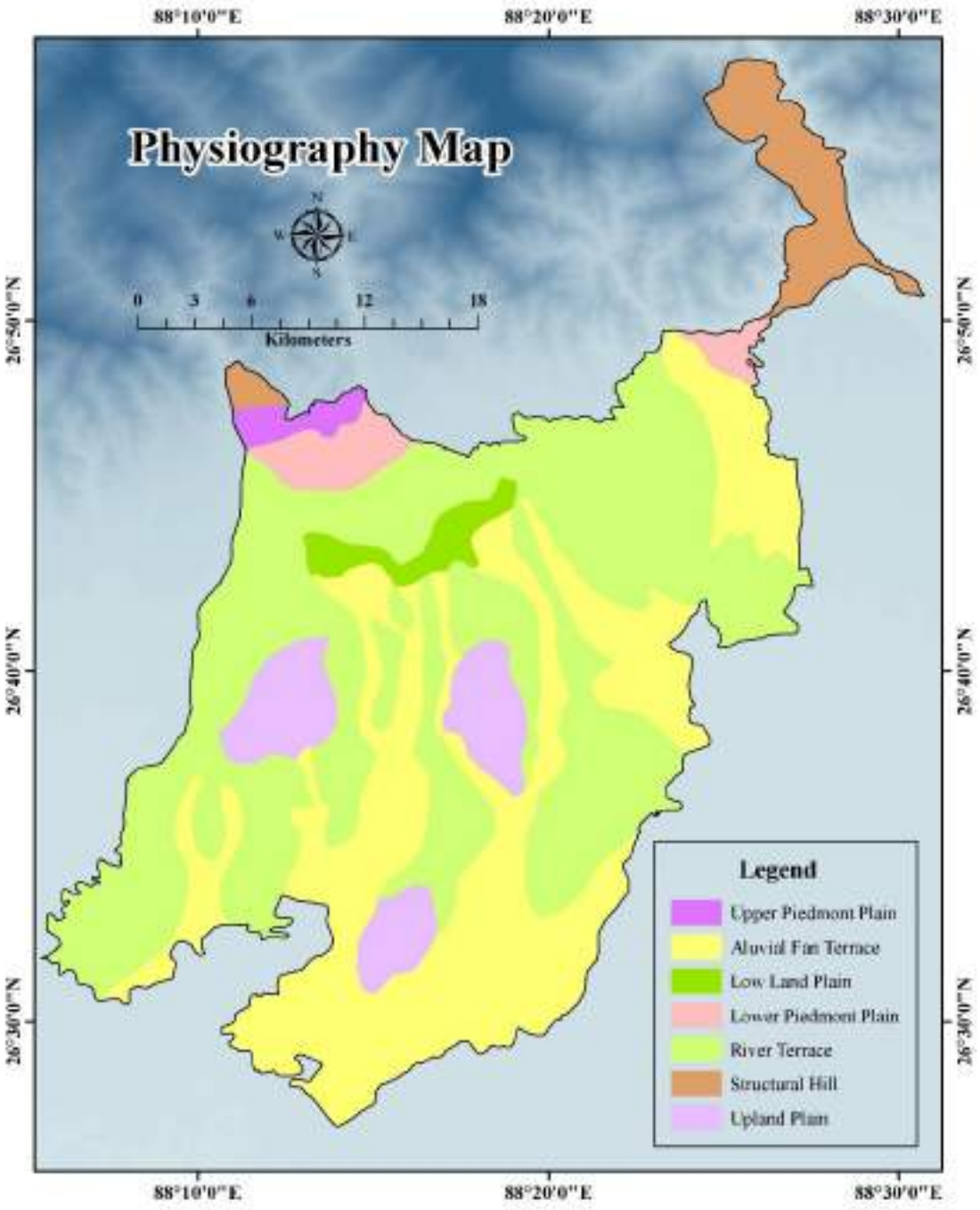
Terraces may be further classified into two groups- (a) River terraces and (b) Alluvial fan terraces.

(a) River terraces: River terraces represent different levels of older flood or low land plains that have undergone repeated upliftment due to changes in long physical, climatic, and tectonic conditions. The Mechi and Mahananda rivers both have wide terraces. The river terraces indicate non-cyclic deposition. The Mechi river's high level river terraces are made up of rounded and sub-angular boulders mixed in a coarse matrix embedded in red clay.

(b) Alluvial fan terraces: Geomorphologically, due to intensive fluvial action alluvial fan terraces were developed on both sides of the rivers and also played an important role in formation and modification of landforms. Boulders and pebbles embedded in sand, silt, and clay make up the majority of alluvial fan terraces. The colours of

fan materials on river cuttings are typically black and yellow, indicating that they are clay materials.

Map No. 3 Physiography Map of the Study Area



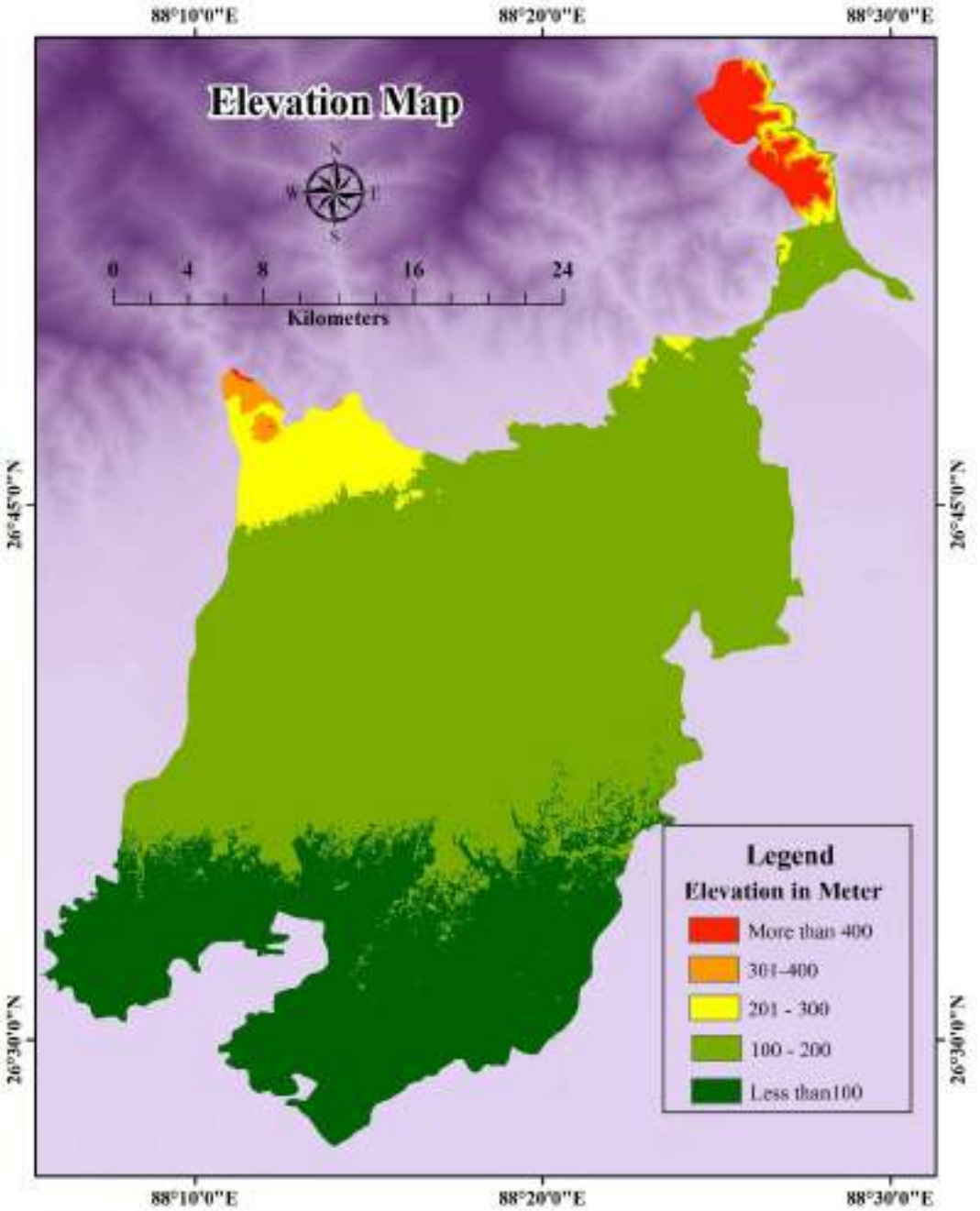
Source: Prepared by the researcher

Elevation

Elevation of any area is extremely important for identifying physiographic characteristics. Elevation has a direct relationship with the rate of rainfall infiltration, soil productivity, the amount of vegetation cover, and so on. According to the prepared ASTER DEM (SRTM), the sub-division lies between 48 mt. to 1299 mt. from mean sea level. The northern part of the study region is made up of uneven hilly terrain having dense vegetation. On the contrary, the majority of the study area i.e. 72 percent, is covered by moderate to low elevation, which is primarily found in the southern and central parts, and this area is a densely populated zone with high agricultural activity and maximum built-up areas. As a result, the elevation can be classified into five categories within the

study area: Very high elevation (More than 400 mt.), High elevation (300- 400 mt.), Moderate elevation (200–300 mt.), Low elevation (100-200 mt.), and Very low elevation (Less than 100 mt.).

Map No. 4 Elevtaion map of the study area



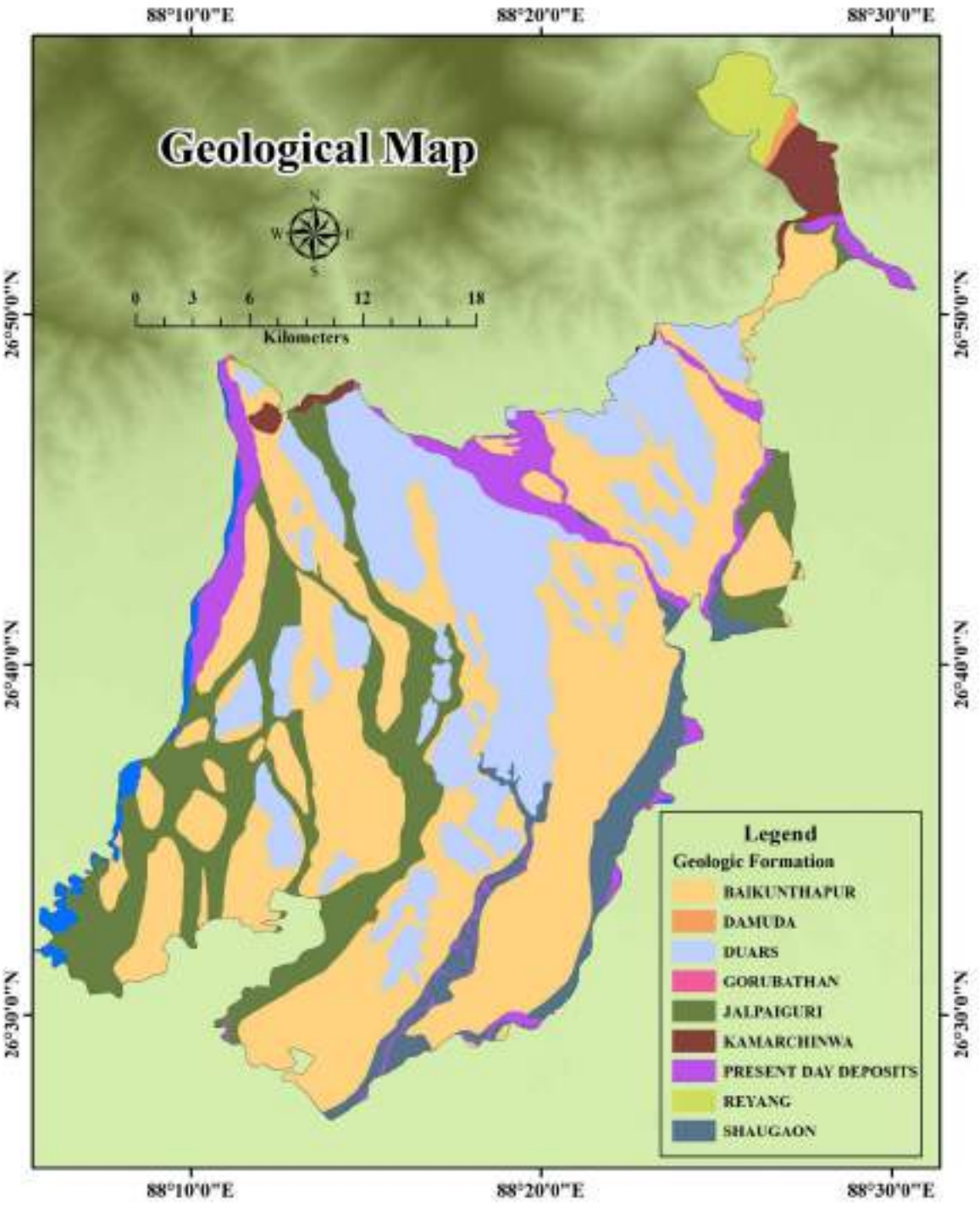
Source: Prepared by the researcher

Geological formations

The geological formation of any area is critical because the rate of infiltration and runoff is primarily determined by the porosity of specific types of rocks. The entire region exhibits features of unusual variation, both stratigraphically and petrographically. The Siwaliks are the first group of rocks encountered while travelling north from the plains of newer alluvial deposits. They are composed of hard and highly feldspathic and slightly micaceous sandstones, quartz pebbles, and schist. A continuous belt of stratified and unstratified deposits of gravels, boulders, sands, and clay occurs along the entire base of this Siwalik zone, forming a sort of transition between the hills and the plains. The daling intrude far inside the plains of Bengal by a series of spur and promontories, through the Siwalik. The map revealed that geologically the study area can be divided into nine major geological formations with four chronological groups. The sequential formations are Baikunthapur formation, Damuda formation, Duars Formation, Gorubathan formation, Jalpaiguri Formation, Kamarchinwa formation, Reyang Formation, Shaugaon Formation and Present day deposites. Northern tip of Matigara block that is the part of sivok hill forest covers with reyang formation, just below this damuda formation can be seen in a smaller strip. There after kamarchinwa formation can also be found in the southern portion of sivok forest. Baikunthapur and Dooars formation can be found almost in

every block and this two type of formation covers more than half of the study area. The Jalpaiguri formation can be found in Siliguri Municipal Corporation region, Kharibari, along the western boundary of Phasidewa block and scartterly some part of Nakshalbari block. The present day deposits are found along the river valley of study area. Shaugaon formation can be found in the eastern portion of the Phasidewa block. However, the majority of the study area is covered by undifferentiated fluvial-glacial sediments that were deposited during the very recent Quaternary period and spread primarily in the southern part, followed by the undifferentiated Siwalik group (Plio-Pleistocene) that mainly extends from the western to the eastern part in a linear form. Thus, it is clear that the study area has been subjected to significant tectonic activity in the geological past, as it is composed of a variety of geological structures ranging from hard crystalline gneiss to deposited alluvium.

Map No. 5 Geological map of the study area



Source: Prepared by the researcher

Drainage System

The drainage inversion of the major rivers of North Bengal, from converging drainage in the hills to divergent drainage in the plains, is one of their most distinguishing features. During the monsoon months, most of the channels, which are normally dry during the dry season, drain a large amount of water. The gradients of their long profiles have also changed significantly. The majority of the rivers are quite large. All rivers in the North Bengal plains are international in the sense that they flow through India and Bangladesh in the lower reaches and Nepal and Bhutan in the upper reaches. Most of the rivers are flowing in a braided channel. The rivers of North Bengal are divided into two systems: the Mahananda system and the Teesta system. All of the rivers originate from forested mountains and are perennial in nature. Rivers dominate the Terai's topography. The courses can be divided into three sections:

(a) The hill section, where rivers confine their waters within deep gorges or defiles and the course of the river is more or less fixed;

(b) The course of the river between its debouchure (the outward opening of a river, of a valley, or of a strait) from the hills to the plains, where semicircular fans are formed by the deposition of boulders and coarser soil particles; and

(c) The plains section, where semicircular fans are formed by the deposition of boulders and coarser soil particles.

The area is mostly covered by dense jungle. The most important rivers encountered from west to east are the Mechi, which forms the border between Nepal and the Darjeeling district, the Balasan, the Mahananda, and the Teesta. The Teesta, which flows through the Terai for a short distance, receives no tributaries from this region. It empties into the Brahmaputra and the Baikunthapur jungle mahal, forming the Terai's watershed between the Ganges and the Brahmaputra. The Terai is a region in north-east India's western plains where tea is grown. Here the gardens are concentrated between the Mechi, the old Balasan and the Mahananda rivers.

a. The Mechi River: The Mechi River, which rises at an elevation of 905m south of the west facing Rangbang spur of the Singalila range and flows through a deep gorge throughout the hilly course, forms the western boundary of the study area as well as the border between Nepal and India. It descends into the Bhabar tract, where its bed widens dramatically. The Mechi runs through the tea garden of Lohagrah. Kiyang Khola is a left bank tributary of Mechi that joins the Ashi Jhora and the Mana Jhora at an elevation of 635 metres. Floods and other tectonic activities cause it to change course several times. Although the old and new Mechi are separated by several kilometres, they both flow in the same direction.

b. The Balasan River: The Balasan rises from the Ghum-Simana ridge's Lepchajagat Peak, flows south almost parallel to the 88º15' E meridian until it reaches the plains at an altitude of 300 m, and then turns south-east, where its valley is larger than the Mahananda's. There are two notable tributaries of river Balason, one is Rinchintong on the left bank and the other is Rangbong on the right bank. It splits into two branches as it enters the plains, one called Old Balasan and the other called New Balasan, both of which join the Mahananda just below Siliguri. In the mountain's foothills, there are numerous terraces. The amount of water flowing through the new channel is significant. The river has numerous tributaries. Pulungdang Khola, Rangbang Nala, Manjwa Jhora, Dudhia Jhora, and the Chenga are just a few examples.

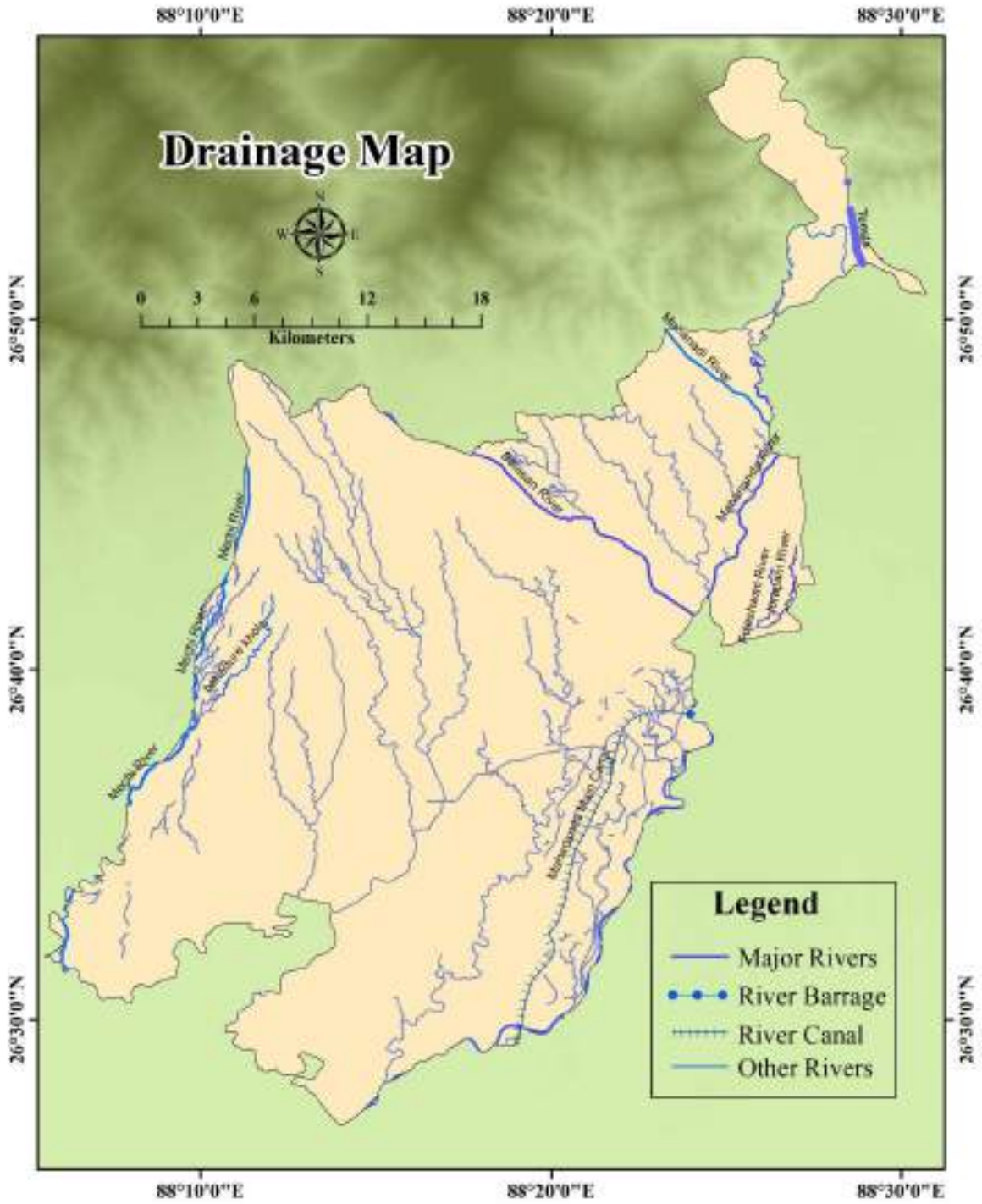
c. The Mahananda River: The Mahananda River, which originates at Paglajhora Falls of Mahaldiram hills, east of Kurseong from an elevation 2103.12 m, forms the study area's eastern boundary. During the monsoon, the catchment area receives a lot of rain. After debouching the hills, the Mahananda flows south until it reaches Siliguri, where it turns south-west. Finally, the river empties into the Ganges. There are several tributaries, including the Trinai, Ronchandi, and Dauk.

Table No. 1 Rivers and their tributaries in study area

Watershed	Sub-Watershed	Flow Regime	Rivers & Tributaries
Brahmaputra	Teesta	Middle	Teesta
Ganga	Mahananda	Upper	Mahananda, Balason, Mechi

Source: Cajee L,2018

Map No. 6 Drainage map of the study area



Source: Prepared by the researcher

Climatic characteristics

Darjeeling district has two different climatic conditions due to its distinctive topographical features having hills in a larger portion of the district and plain lands of Terai towards south and south-eastern part. The marshy tract of Terai is humid and warm, showing typical tropical and sub-tropical climatic conditions depending upon the elevation.

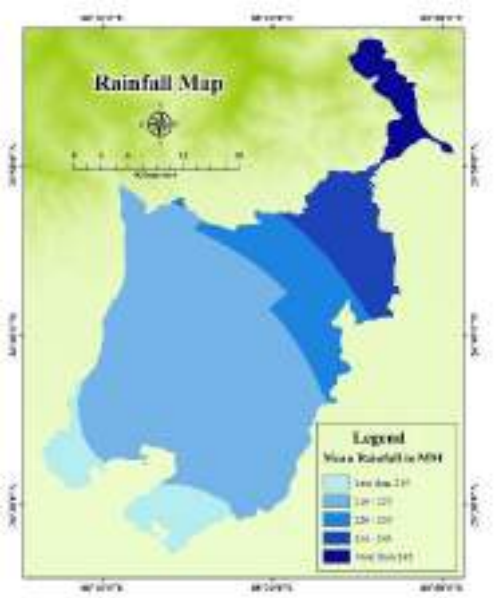
a. Rainfall: The Darjeeling Himalayan region's rainfall pattern is influenced by the south–west monsoon, and it receives high annual rainfall with frequent heavy rains, primarily between June and September (monsoon period). The southern front of the Darjeeling Himalaya acts as a first orographic shield for south-west monsoon winds that arrive from the Bay of Bengal towards Himalaya during the monsoon season, resulting in the highest rainfall intensity (Prokop and Walanus 2017). However, the study region's annual mean rainfall is around 2203 mm.

b. Temperature: The mean minimum and maximum temperatures are 13.8 °C and 28.6°C, respectively. The maximum temperature is usually reached during monsoon and the lowest temperature is reached during the cold winter, between December to March, depending on elevation.

The rainfall map and temperature maps for the research area have been created using the Inverse Distance Weighted Interpolation Method (IDW) in ArcGIS 10.3 software. The study region has been classified into five rainfall zone. These ranges from 200 mm to 300 mm. Almost half of the study area falls under two rainfall zones i.e. 216 to 225 mm and <215 mm. The high rainfall zone i.e. >245 mm can be found in northern part of Matigara block.

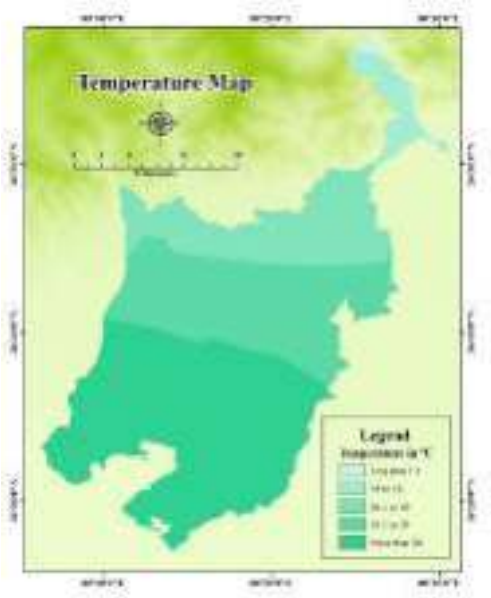
On the other hand, the study area has been classified into 5 temperature zones, i.e. <14°C, 14° to 16°C, 16.1° to 18°C, 18.1° to 20°C and >22°C. The southern part of the study area consists of two blocks viz. Kharibari and Phansidewa falls under the highest temperature category i.e. >22°C. The second highest temperature zone i.e. 18.1°C to 20°C is found in the central part of the study area. Rest of the temperature categories are found in the northern part of the study area.

Map No. 7 Rainfall map of the study area



Source: Prepared by the researcher

Map No.8 Temperature map of the study area



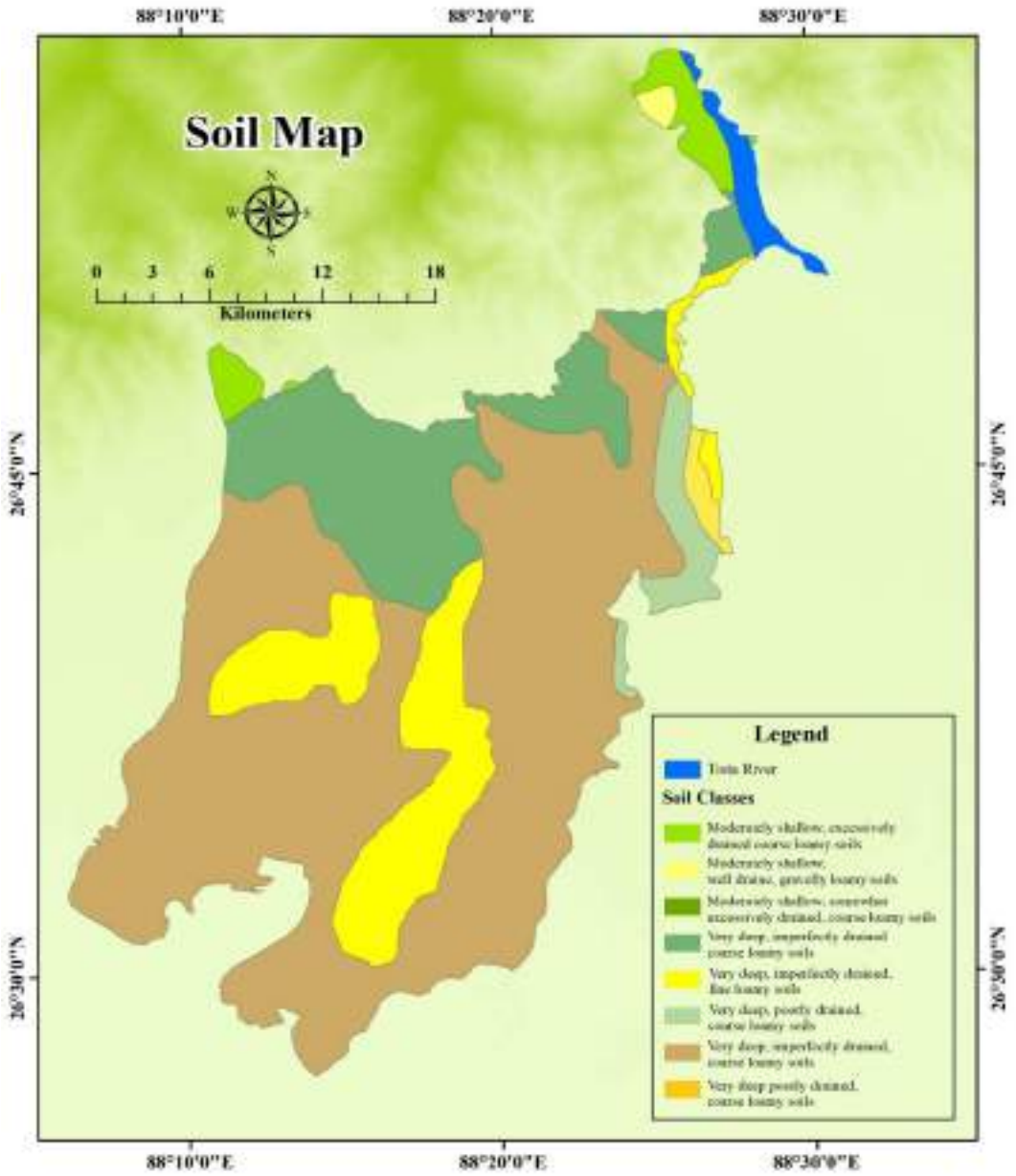
Source: Prepared by the researcher

Soil

Soils typically have a strong correlation with an area's physiographic condition. The small northern part of the study area is dominated by soils originated from the underlying geological structure. On the contrary, the entire southern part of the area is controlled by the soil developed by both fluvial action and lithological process. Both of the process ultimately controlled the structure, texture and other properties of soil.

According to National Bureau of Soil Survey (NBSS) and Land Use Planning (LUP), the study area can be classified into 8 categories with respect to soil types. The northern tip of the Matigara block and north-western tip of Naxalbari block is covered with moderately shallow, excessively drained coarse loamy soil. On steep side slopes there is gravelly loamy surface soil. Very deep imperfectly drained coarse loamy soil occur on piedmont plains with loamy surface has been found in the central and northern part of Naxalbari block and few patches in the northern part of Matigara block. More than half of the study area has been covered with very deep imperfectly drained coarse loamy soil occurring on level to nearly level piedmont plain with loamy surface. Few patches of very deep imperfectly drained coarse loamy soil occur on very gently sloping lower piedmont plain has been found in central part stretching towards the southern part of the study area and a small portion in eastern part. Along the eastern boundary of Matigara block a very deep poorly drained coarse loamy soils has been found. Moderately shallow well drained gravelly loamy soil occur on the steep side slopes with gravelly loamy surface has been found along the eastern part of Siliguri Municipal Corporation.

Map No. 9 Soil map of the study area



Source: Prepared by Researcher

Natural Vegetation

Vegetation is primarily influenced by climate and soil in a given location. There is a dense cover of vegetation in the study area, which is highly associated with the form of slopes. The area is characterized by steep slopes on the north and north-western sides. The natural forests of study area may be grouped into following broad categories:

a) Tropical semi-evergreen forest: These type of forests are restricted to foothills. The important species are michelia champaca, terminalia myriocarpa, ailanthus grandis and phoebe species. All these species yield valuable commercial timbers.

b) Tropical moist deciduous forest: Moist deciduous forests have shorea robusta as important species. Among its associates, the species like michelia champaca, schima wallichii and chukrassia velutina which are interspersed with riverain forests of acacia catechu, dalbergia sissoo and bombax ceiba, exist.

c) Sub-tropical hill forest: These forests occur upto an elevation of 1.824 m (refer under sub-tropical broad-leaved hill forests by Champion and Seth, 1968). The common species are betula cylindrostachys, anus nepalensis, schima wallichii and engelhardtia spectata etc.

Manmade Forests: The valuable indigenous species form the main component of the plantations in the district. An exotic conifer, cryptomeria japonica, has done exceedingly well in the hilly tracts of this area. Other exotic conifers like pinus petula, cupressus species etc. have also shown great promise in the region

There are several reserved or protected forest in this area namely Bagdogra Range, Panighata Range, Mahananda Wild Life Forest. In addition, many open forest areas can be found here, especially to the south of the study area. (An area recorded as forest but not included in Reserved or Protected forest category. Ownership status of such forests varies from state to state.)

The main factors for dense vegetation in the terai region is low land with gentle slopes and excellent soil fertility. The vast bamboo bushes cover the majority of the land. Twenty to thirty fern species can also be found on the lower and upper terraces of hilly patches. The plains of the study region are densely covered with weeds and grasses.

Conclusion

Therefore, the study area of Siliguri Municipal Corporation and 4 C.D blocks of Siliguri sub-division viz. Matigara, Naxalbari, Kharibari and Phansidewa have a total area of 819.61 sq. km. According to the census 2011, the total population of the study area is 1189838 persons consisting of 65417 urban population and 535221 rural population. J.D. Hooller first used the term 'siligoree' in 1867. Siliguri was declared a sub-division head quarter under Darjeeling district for the first time in 1907. Initially Siliguri developed rather sporadically. After the First World War in 1919, modern motorised transportation system was introduced in Siliguri to transport people from Siliguri to Darjeeling and back. Public bus was introduced in Siliguri in the year 1925, commuting people from Siliguri to Naxalbari and back. Gradually the population of Siliguri reached 7000 in 1931 and for the first time it was recognized as a census town. During the period of partition and social unrest, the population of Siliguri increased rapidly due to influx of huge number of refugees from East Pakistan.

Siliguri got the status of a municipality in 1949 after independence. After the Chinese invasion in 1962, the roads in and around Siliguri was developed rapidly for strategic purpose. Gradually a large number of military, air force and army bases were established in and around Siliguri making this town a very important cotterpin in Indian defence system. With the development of NJP railway station in 1964 on the outskirts of the city, Siliguri emerged as a railway transportation hub connecting north-east India with the mainland. The construction of Farakka Barrage in 1974 led to uninterrupted rail and road connectivity between Siliguri and South Bengal making people's movement more convenient resulting in further growth of Siliguri. After the creation of Bangladesh in 1971, another wave of refugees came to Siliguri resulting in rapid increase in population. Finally, in 1994, Siliguri got the status of a Municipal Corporation.

In terms of physiography, the study area is part of an outlying hills of the lower Himalayas and a stretch of land along the base known as terai. The elevation of the study area ranges from 48 m to 1299 m above the mean sea level. Major rivers flowing through the study area are Teesta, Mahananda, Balasan and Mechi. The annual average rainfall in the study area is above 2000 mm with mean maximum and minimum temperature lying between 13.8° C to 28.6° C. Forests are abundant in the study area with a number of reserved and protected one.

Agriculture in the study area is of diverse nature with crops like paddy, jute, potato and various vegetables cultivated in abundance. Tea plantation is very common in the study area and the economy of the region depends a lot on the processing of the tea leaves. Siliguri is essentially an urban centre which has flourished with the passage of time due to development in trade and commerce. It is the main distribution hub of industrial and household goods moving to the neighbouring state of Sikkim, Darjeeling hills, North-East India, Nepal and Bhutan. Tourism is well developed in North Bengal and Siliguri acts as the gateway to different tourist spots located in Sikkim, Darjeeling and the forests of North Bengal.

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Population Growth of Rural & Urban Settlement of Siliguri Subdivision

[1]Tuhin Dey Roy and [2]Arindam Basak

[1]Research Paper, Department of Geography and Applied Geography, University of North Bengal
[2]Associate Professor, Department of Geography and Applied Geography, University of North Bengal

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ABSTRACT

Population growth is a demographic process whereby increasing proportion population in area, structural change and behavioral transformation affecting both people and place. This process is spreading all over the world. It includes both the developmental opportunities and some harmful effects. Siliguri, the gateway to North East India, is crucial for the State of West Bengal as well as Eastern India. Especially, in developing countries like India, chronological population increase of any particular area create hardship environmental condition particularly for local residents. The level of population growth in Siliguri subdivision is at acceleration stage. The present investigation has been made to analyse the Population growth rate & try to find out the relationship between the distance and population growth in this area.

Introduction

"Change in the size of a population, whether positive or negative is called 'growth'. Growth of population comes from only three source- births, deaths and migration" (George W. Barday, 1958). Population growth is the term used to describe changes in population size that are accompanied by a numerical increase. Basically, three key factors—births, deaths, and migration within the time period under consideration—are the main causes of population growth in a region. The pattern of population distribution in a region is mostly determined by changes in population characteristics such as location, distribution, density, growth, and movement throughout the past. Additionally, the factors affecting population change play a crucial role in determining the demographic characteristic of "place," and the population growth pattern in a given area beautifully illustrates the economic potential and evolving character of various sub-areas within a region. The changes in population trends, whether positive or negative, represent the history of man's adaptation to the environmental options available in the location.

Objective

- To study the growth of rural and urban settlements within study area.
- To find out the relationship between distance from Siliguri Municipal Corporation with the population growth in rural settlements.

Database The secondary data like demographic characteristics, growth of rural and urban settlements and economic activities was collected from District Census Handbook, Town and Village Directory, West Bengal Administrative Atlas, Government Reports, Occasional Papers and other reports of Census of India. The analysis will take into consideration the three consecutive census years of 1991, 2001 and 2011.

Methodology

To fulfill the objective i.e. to study the growth of rural and urban settlements within study area decadal population growth rate for the rural and urban settlements will be analyzed from 1991 onwards and the change will be taken into account. To calculating the distance from Siliguri Municipal Corporation to the actual road distance of each village and census towns of the study area from Siliguri Municipal Corporation has also been calculated.

Population growth in India

About the demographic characteristics of the ancient era, little is known. Of course, contemporary scholars have given numerous estimates based on the size of the troops and the amount of arable land. Around the year 1600 AD, Kingsley Davis estimated the population of India to be 125 million, and he said that it stayed there until around the year 1750 AD. After 1871, systematic decennial censuses were carried out, which provided for accurate population calculation. The census data is available over the past 100 years, which offer largely accurate projections of the population and growth rate. Even though the numbers are always shifting, India currently accounts for about 17.5% of the world's population with just 2.4 percent of its total land area. India's population in 2011 was estimated to be 1.21 billion. India has the second largest population in the world, only after China.

Table No. 1 Trend of population growth in India

Census years	Population (In Million)	Decadal Growth Rate (In %)
1901	238.4	-
1911	252.1	5.7
1921	251.3	-0.3

1931	279.0	11.0
1941	318.7	14.0
1951	361.1	13.3
1961	439.2	21.5
1971	548.2	24.8
1981	683.3	24.6
1991	846.3	23.8
2001	1024.8	20.2
2011	1210.1	17.7
Source: Census of India 2011, Calculated by the Researcher		

The population growth pattern in India during the course of the 20th century is depicted in the above table. It is evident that population growth fluctuated up until 2011. The table make it abundantly evident that, except during 1911–21 when the "Influenza Epidemic" occurred in 1918, the decadal population growth rate has been rising steadily since 1901. Therefore, the population growth rate between 1911-21 was negative. After 1921, the population grew quickly as a result of government initiatives to promote the development of healthcare facilities and combat sickness (Cholera, Malaria, Small pox, etc.). The rapid population expansion is mostly the result of a declining death rate rather than an abrupt increase in birth rates. Moreover, the partition of the country resulted in waves of migrants coming from both East and West Pakistan which also accounted for a rapid expansion of population in India during this time. The population growth rate had slightly increased from 1931 to 1941 but had barely changed from 1941 to 1951. Thereafter, the decadal growth rate of population was high upto 1981. After this period, the rate of population growth in India began to show a downward trend as a result of advancements in the medical field, birth control measures, public awareness of social issues and governmental policies etc.

Population growth in West Bengal

According to 2011 census, West Bengal had a population of 9.13 crores. The state had 17.54 percent of the total population of the country with 88,752 sq. km area. It is the fourth most populous state in India and the fourteenth-largest Indian state by area. The population which was 26.30 million just after independence has grown to 91.35 million in 2011. Because half of the state was ceded to Bangladesh after partition, only the post-independence period of West Bengal's population growth information has been taken into account here. The decadal population growth from 1951 to 1981 is definitely an unprecedented one that corresponds with a period of tremendous growth, as seen by the significantly lower death rate brought on by improved health condition and influx of migrants from Bangladesh.

Because more health institutions have been established, more people are aware of population explosion, and better government population policies, the decadal population growth between 1981 and 2011 appears to have decreased compared to the previous period. Therefore, even if the state's absolute population is increasing, the rate of population growth is dropping during the last two decades. The death rate was quite low throughout this time, and the fertility rate was stable and average. Since 1951, West Bengal's population growth rate can be compared to the national average. Table no. 3.2 shows that the population growth rate is not uniform.

Table No. 2 Trend of population growth in West Bengal

Census years	Population (In Million)	Growth Rate (In %)
1951	26.30	13.22
1961	34.93	32.80
1971	44.31	26.87
1981	54.58	23.17
1991	68.08	24.73
2001	80.18	17.77
2011	91.35	13.93
Source: Census of India 2011, Calculated by the Researcher		

Population growth in Siliguri Subdivision during 1991-2011

Explanation for the variations in population growth in each of the 1991-2001 and 2001-2011 decades is presented below, on the basis of data obtained from the census report of India 1991, 2001, 2011 (table 3.3 & 3.4). The table reveals that there is significant difference in the decadal growth of population in each of the 4 blocks in the study area. The decadal change in population from 1991-2001 was 43.81 percent for Matigara, 54.60 percent for Naxalbari, 22.46 percent for Phasidewa and 37.83 percent for Kharibari. Steady development in economy, along with increased incidence of migration, improvement in educational facilities, infrastructural development and improved health and medical facilities are some of the important factors that accelerated the population growth during this period.

Although in the following decade i.e. 2001-2011, the rate of growth of rural population witnessed a decline in all the four blocks of the study area, there was a positive growth in the total population. The highest growth rate in population during 2001-2011 was recorded at Matigara, followed by Kharibari, Phansidewa and Naxalbari respectively. Matigara block which is located nearest to Siliguri Municipal Corporation witnessed a growth in population over 50 percent during 2001-2011. The decline in the rural population can be attributed to development of rural health care centres, along with active participation of N.G.Os in spreading awareness about family planning and measures of population control.

Table No. 3 Decadal variation of population growth in Siliguri Subdivision

Sl. No.	Blocks/ Municipal Corporation	Population			% of Decadal Variation	
		1991	2001	2011	1991-2001	2001-2011
1	Matigara	89927	129326	197278	43.81	52.54
2	Naxalbari	93731	144915	165523	54.60	14.22
4	Phasidewa	140045	171508	204522	22.46	19.24
3	Kharibari	64012	88230	109251	37.83	23.82
5	Siliguri	216950	472374	513265	117.73	8.66

Source: Census of India 1991, 2001 and 2011, Calculated by the Researcher.

The table 3.4 shows the decadal variation in the growth rate of rural and urban population in the study area. The table shows that rural population in each of the four blocks increased from 1991 to 2011. However, the rural population growth was not uniform in all the decades. In some decade growth was low while in some decades the growth was high. The decadal change in rural population of Matigara in 2001-2011 was 9.41 percent, which was 45.40 percent during the previous decade. The sharp decline in rural growth rate was due to the conversion of rural villages into census towns. Similarly, the decadal change in rural population of Naxalbari in 2001-2011 was negative at -24.33 percent owing to conversion of rural villages into census towns. The decadal change in rural population for Phasidewa and Kharibari in 2001-2011 remained at 19.24 percent and 10.39 percent respectively. These figures are significantly lower than their decadal change of rural population for the previous decade.

According to the table 3.4, urban population of the region witnessed a steady increase in growth rate. The urban growth in each of the four blocks however is not uniform and show block wise decadal variation. Infact the blocks of Phansidewa and Kharibari did not have any urban centre so their urban population was nil during 1991 and 2001. For the other two blocks, the decadal growth rate of urban population recorded has either been very low in some cases while very high in other. During 1991-2001, Matigara block experienced growth of urban population of 14.92 percentage with a single census town namely Bairatisal. Naxalbari Block on the other hand witnessed an urban population growth rate of 30.75 % with the single census town namely, Uttar Bagdogra. During the same period, Siliguri Municipal Corporation also witnessed a very high population growth rate. This high growth rate was due to the emergence of Siliguri as one of the most important urban centre in the entire North Bengal. Along with this easy availability of basic infrastructural facilities and the extension of municipal boundary also contributed towards high growth rate of urban population. Consequently, Siliguri Municipal Corporation experienced 117.73 percent decadal growth rate in 1991-2001 which is far more than the national and state urban decadal growth rate. The following decade of 2001-2011 also saw a rise in the urban population growth rate with Matigara block experiencing a massive increase of (1041.44%) due to conversion of 5 big villages into census towns. Similarly, the urban population of Naxalbari block increased rapidly with 329.85 percent, as a result of rural-urban migration. This decade was marked by growth of industries which attracted rural population towards urban centres because of the increased employment opportunities. Easy access to infrastructural facilities, better education and health facilities and increased opportunity of trade and commerce and other services also resulted in influx of rural population into towns. Kharibari block in 2011 saw emergence of two urban centre namely Shyamdhan, Kharibari. During 2001-2011, Siliguri Municipal Corporation experienced a growth of 8.66 percent indicating a balanced urban growth, which is far lower than the previous decade.

Table No. 4 Decadal variation of rural & urban population in the study area

Sl. No.	Blocks	Population						Percentage of decadal variation			
		1991		2001		2011		1991-2001		2001-2011	
		Rura	Urb	Rural	Urba	Rura	Ur	Ru	Urban	Rura	Urban
1	Matigara	85224	4703	123921	5405	135583	61695	45.40	14.92	9.41	1041.44
2	Naxalbari	81667	12064	129141	15774	97717	67806	58.13	30.75	-24.33	329.85
3	Phansidewa	140045	-	171508	-	204522	-	22.46	-	19.24	-
4	Kharibari	64012	-	88230	-	97399	11852	37.80	-	10.39	-

Source: Census of India 1991, 2001 and 2011, Calculated by the Researcher.

Size class classification of rural settlements in the study area

The census of India classifies rural settlements on the basis of their population size into seven categories. These are less than 200 populations, 200-499 population, 500-999 population, 1000-1999 population, 2000-4999 population, 5000-9999 population and more than 10000 populations. Accordingly, all the villages in the study area has been classified for 1991, 2001 and 2011 respectively.

Table No. 5 C.D. block wise number of inhabited villages, 1991

Category	Matigara	Naxalbari	Phasidewa	Kharibari	Total
<200	4	15	10	5	34
200-499	14	16	12	22	64
500-999	17	27	32	25	101
1000-1999	27	22	26	18	93
2000-4999	6	12	16	5	39
5000-9999	1	-	3	-	4
>10000	-	-	-	-	-
Total	69	92	99	75	335

Source: Census of India 1991, Calculated by the Researcher.

From the above table 3.5 it can be seen that in the year 1991, there were 335 villages situated in Siliguri sub-division consisting of 69 villages in Matigara block, 92 villages in Naxalbari block, 99 villages in Phasidewa block and 75 villages in Kharibari block. The population size of villages in each of the blocks varied. The villages have therefore been categorized into seven categories. i.e., below 200, 200-499, 500-999, 1000-1999, 2000-4999, 5000-9999 and above 10000 on the basis of their total population. In the year 1991 there were total 34 villages having population below 200, with 4 villages in Matigara block, 15 villages in Naxalbari block, 10 villages in Phasidewa block and 5 villages in Kharibari block. There were 64 villages having population between 200-499, out of which 14 villages are in Matigara block, 16 villages in Naxalbari block, 12 villages in Phasidewa block and 22 villages in Kharibari block. In the category of population size 500-999 there were 101 villages, consisting of 17 villages in Matigara block, 27 villages in Naxalbari block, 32 villages in Phasidewa block and 25 villages in Kharibari Block, respectively. In the category of population size 1000-1999, there were 93 villages, with 27 villages from Matigara block, 22 villages from Naxalbari block, 26 villages from Phasidewa block and 18 villages from Kharibari block. In the category of population size 2000-4999, there were 39 villages, consisting 6 villages from Matigara block, 12 villages from Naxalbari block, 16 villages from Phasidewa block and 5 villages from Kharibari block. In the category of population size 5000-9999, there were 4 villages, consisting 1 village in Matigara block and 3 villages in Phasidewa block, respectively. There isn't any village with population above 10000 in any of the four blocks. In terms of the total number of villages in 1991, the highest was in Phansidewa block and lowest was in Matigara block. From the above discussion is clear that the number of villages and their distribution is different from one block to another.

Table No. 6 C.D. block wise number of inhabited villages, 2001

Category	Matigara	Naxalbari	Phasidewa	Kharibari	Total
<200	10	12	12	3	37
200-499	6	9	12	22	49
500-999	14	19	30	16	79
1000-1999	18	24	23	24	89
2000-4999	17	12	19	9	57
5000-9999	2	5	6	1	14
10000>	2	1	1	-	4
Total	69	82	103	75	329

Source: Census of India 2001, Calculated by the Researcher.

Table 3.6 shows the total number of inhabited villages in the study area in 2001. There were 329 villages situated in Siliguri sub-division in the year 2001 consisting of 69 villages in Matigara, 82 villages in Naxalbari, 103 villages in Phasidewa and 75 villages in Kharibari. The size of population in these villages varies. These villages are further divided according to their total population size into seven categories. i.e., total population below 200, 200-499, 500-999, 1000-1999, 2000-4999, 5000-9999 and above 10000. In the year 2001 there were total 37 villages having population below 200, consisting of 10 villages in Matigara block, 12 villages in Naxalbari block, 12 villages in Phasidewa block and 3 villages in Kharibari block. There were 49 villages with population between 200-499, with 6 villages in Matigara block, 9 villages in Naxalbari

block, 12 villages in Phasidewa block and 22 villages in Kharibari block. Similarly, there were 79 villages with population size 500-999 out of which 14 villages were in Matigara block, 19 villages in Naxalbari block, 30 villages in Phasidewa block and 16 villages in Kharibari block. There were 89 villages with the population size of 1000-1999, with18 villages in Matigara block, 24 villages in Naxalbari block, 23 villages in Phasidewa block and 24 villages in Kharibari block. In the population size category of 2000-4999, there were 57 villages consisting of 17 villages in Matigara block, 12 villages in Naxalbari block, 19 villages in Phasidewa block, 9 villages in Kharibari block respectively. Similarly, there were 14 villages with the population size of 5000-9999, consisting of 2 villages in Matigara block, 5 villages in Naxalbari block, 6 villages in Phasidewa block and 1 village in Kharibari block respectively. Finally, there were 4 villages having population above 10000, with 2 villages in Matigara block, 1 village in Naxalbari block and 1 village in Phasidewa block respectively. It can be seen that the number of villages in each block along with their respective population size and their distribution differ from one block to another in the study area.

Table No. 7 C.D. block wise number of inhabited villages, 2011

Category	Matigara	Naxalbari	Phasidewa	Kharibari	Total
<200	7	7	7	5	26
200-499	10	13	11	11	45
500-999	6	21	24	21	72
1000-1999	10	24	29	22	85
2000-4999	18	13	22	13	66
5000-9999	8	0	8	1	17
10000>	0	0	2	-	2
Total	59	78	103	73	313

Source: District Census Hand Book, Census of India 2011, Calculated by Researcher

Table 3.7 shows the distribution of villages according to their size class in the study area for 2011. From the above table it seen that in the year 2011 there are 313 inhabited villages in Siliguri sub-division consisting of 59 villages in Matigara, 78 villages in Naxalbari, 103 villages in Phasidewa and 73 villages in Kharibari. The size of population in these villages is non homogenous and differ from village to village. The villages are divided according to their total population size into seven categories of total population i.e., below 200, 200-499, 500-999, 1000-1999, 2000-4999, 5000-9999, above 10000. In the year 2011 there were total 26 villages having population below 200, consisting of 7 villages in Matigara block, 7 villages in Naxalbari block, 7 villages in Phasidewa block and 5 villages in Kharibari block. Likewise, there were 45 villages having population between 200-499, with 10 villages in Matigara block, 13 villages in Naxalbari block, 11 villages in Phasidewa block and 11 villages in Kharibari block. In the category of population size 500-999 there were 72 villages consisting 6 villages in Matigara block, 21 villages in Naxalbari block, 24 villages in Phasidewa block and 21 villages in Kharibari block respectively. In the category of population size 1000-1999, there were 85 villages consisting of 10 villages in Matigara block, 24 villages in Naxalbari block, 29 villages in Phasidewa block and 22 villages in Kharibari block respectively. In the category of population size 2000-4999, there were 66 villages consisting of 18 villages in Matigara block, 13 villages in Naxalbari block, 22 villages in Phasidewa block and 13 villages in Kharibari block respectively. In the category of population size 5000-9999, there were 17 villages consisting of 8 villages in Matigara block, 8 villages in Phasidewa block and 1 village in Kharibari block, respectively. There were 2 villages having population above 10000 which belongs to Phasidewa block.Thus it is seen that the number of villages and their distribution differ from block to block in the study area.

It is worth mentioning that in 1991 and 2001, there were only 2 census towns viz. Bairatisal (Matigara block) and Uttar Bagdogra (Naxalbari block) however, in 2011 census the number of census towns rapidly increased to 14. Out of the total number of newly formed census towns, Matigara block consisted of 6 census towns namely, Bairatisal, Tari, Jitu, Kalkut, Mathapari and Bara Mohonsingh. Naxalbari block consisted of 6 census towns namely Lalman, Uttar Bagdogra, Dakshin Bagdogra, Dumriguri, Geni and Bhimram. Kharibari block consisted 2 census towns viz. Shyamdhan and Kharibari. One interesting fact is from 1991 to 2011 the total number of villages in the smallest four size class categories has declined while the same in largest three size class categories has increased in the study area.

Population growth across the villages and census towns of the study area

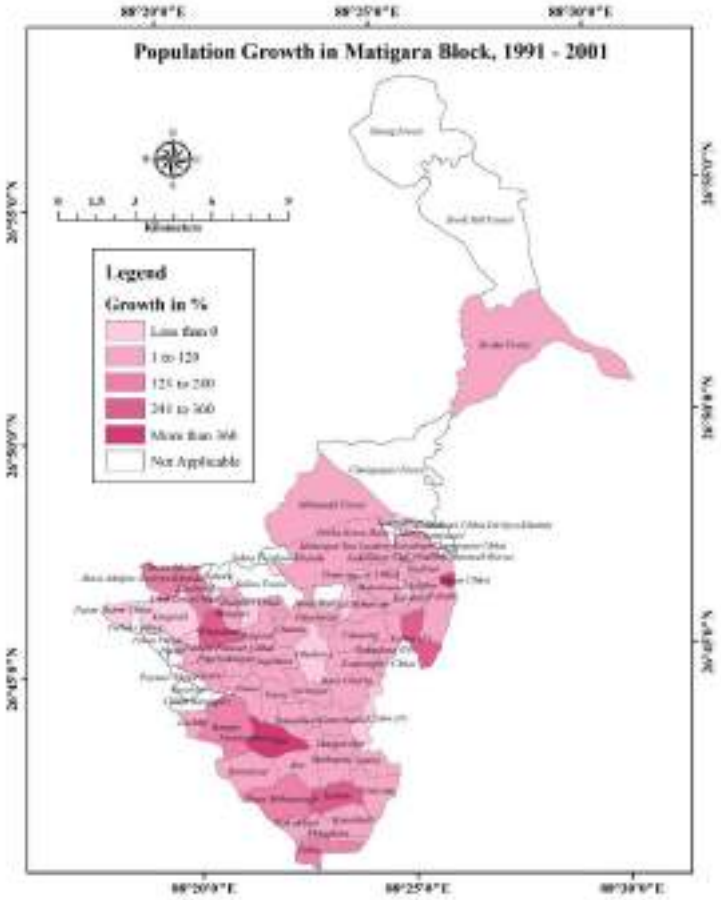
In the previous section, temporal trend of population growth in Siliguri sub-division and Siliguri Municipal Corporation has been analyzed and it is observed that the growth of population in different parts of the study area cannot be assumed to be uniform. Hence, spatial analysis of population growth becomes necessary. In this context the present part deals with the trend of population growth at village level for the time of period 1991-2011. With the present study being geographically diverse and spread over an area of 819.61 sq. km, differences in population growth becomes a natural phenomenon. Attempts will therefore be made to identify and give a detailed account on the inter-block difference in population growth during the decades of 1991-2001 and 2001-2011 respectively. Since it has been found that the total number of villages has changed in different years of census (1991-335, 2001-329, and 2011-313) only those villages which were present in two consequtive census year

have been taken into consideration to show the change in population.

Table 8 C.D. block wise village level population & growth of population: Matigara block							
Sl. No	Name	Distance from S.M.C in km.	Population			Decadal Growth Rate (%)	
			1991	2001	2011	1991-2001	2001-2011
1	Bairatisal	11.4	6996	_	_	_	_
2	Bairatisal(C.T)*	11.4	4703	5405	4916	14.93	-9.05
3	Baniakhari	8.4	1984	3555	5088	79.18	43.12
4	Bara Adalpur Dwitiya	16.6	677	1858	419	174.45	-77.45
5	Bara Gharia	6.6	1393	1979	3744	42.07	89.19
6	Bara Mohansingh**	9.8	3242	11006	15616	239.48	41.89
7	Bataliguri	15.8	289	265	362	-8.30	36.60
8	Champasari Chhat	11.5	_	88	96	_	9.09
9	Chamta	9.9	1060	1305	3446	23.11	164.06
10	Chmamtataguri	10.1	382	713	1267	86.65	77.70
11	Daknikata	6.9	1321	1669	4497	26.34	169.44
12	Damra Gayer Chhat	11.2	1164	21	_	-98.20	_
13	Dhukuria	8.7	1275	1147	1783	-10.04	55.45
14	Dumriguri Chhat	16	627	768	950	22.49	23.70
15	Duramarir Chhat	11.5	993	147	_	-85.20	_
16	Foutsingher Chhat	5.8	440	713	_	62.05	_
17	Fulbari Pataner Chhat	15.2	151	170	234	12.58	37.65
18	Gal Makhari	11.2	242	73	45	-69.83	-38.36
19	Gaur Charan	6.8	1054	1889	4124	79.22	118.32
20	Gouri	16.6	347	399	428	14.99	7.27
21	Guria	10.7	1547	2008	2913	29.80	45.07
22	Jadu Bhitar Chhat	10.2	445	799	1242	79.55	55.44
23	Jhauguri	12.4	354	677	767	91.24	13.29
24	Jhauguri Chhat	11.8	1770	1745	147	-1.41	-91.58
25	Jitu**	8.4	2534	5004	5892	97.47	17.75
26	Jugi Bhita	13.5	942	1153	1528	22.40	32.52
27	Kala Bari	8.5	575	784	1482	36.35	89.03
28	Kalam	8.1	528	2146	5664	306.44	163.93
29	Kalkut**	6.8	1278	4356	9184	240.85	110.84
30	Kamala Barir Chhat	12.7	207	236	264	14.01	11.86
31	Karai Bari	10.7	765	841	1183	9.93	40.67
32	Kauakhali	5.4	1838	3917	6615	113.11	68.88
33	Kawakhari	8.3	1210	2048	3676	69.26	79.49
34	Khaprul	15.9	2402	1671	4004	-30.43	139.62
35	Kho Palasi	14.1	633	2764	5284	336.65	91.17
36	Khok Long	16.3	1275	3359	737	163.45	-78.06
37	Khoklong Chaat	16.2	344	47	52	-86.34	10.64
38	Lachka	14.5	806	1035	1126	28.41	8.79
39	Lalsara Chhat	18.5	328	430	551	31.10	28.14
40	Mahatram	8.6	1767	2531	1299	43.24	-48.68
41	Mahish Mari	9.4	831	1306	6010	57.16	360.18
42	Malahar	8.3	451	127	376	-71.84	196.06
43	Mathapari**	7	3144	6689	11529	112.75	72.36
44	Matigara Hat	6.1	1990	3828	4710	92.36	23.04
45	Mohandi Forest	12.8	502	556	_	10.76	_
46	Mohorgon Tea Garden	13.3	1801	2873	3169	59.52	10.30
47	Nengti Chhara	10	344	1994	3182	479.65	59.58
48	Nichitpur	9	542	688	990	26.94	43.90
49	Nimai	11	1349	2172	3816	61.01	75.69
50	Nunu Bairagi Chhat	8.9	32	_	_	_	_
51	Nunubairagi	12.9	1088	218	364	-79.96	66.97

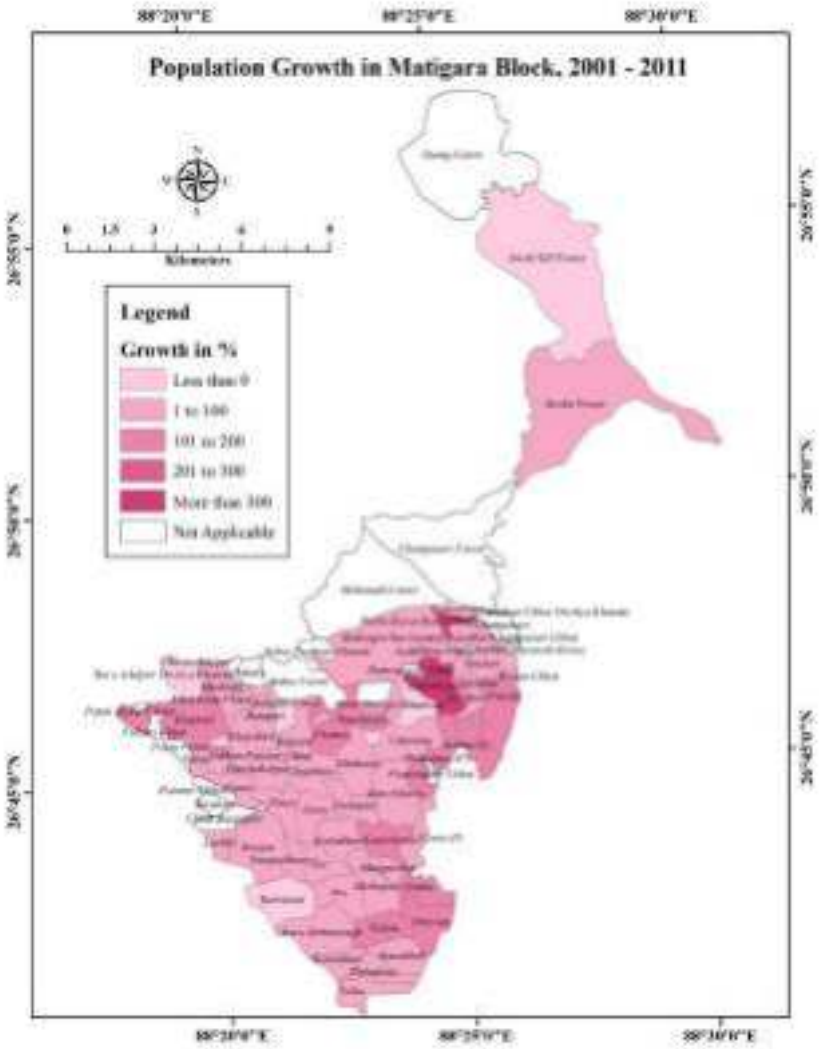
52	Palash	7.9	1052	1525	4204	44.96	175.67
53	Pancha Kulguri	12.4	814	1715	2485	110.69	44.90
54	Panchanai	9.1	1257	2446	5105	94.59	108.71
55	Patan	15.7	_	125	142	_	13.60
56	Patan Jharer	17.6	825	693	_	-16.00	_
57	Patiram	4	2450	3232	8315	31.92	157.27
58	Pelku	8.6	656	1802	3112	174.70	72.70
59	Purba Karai Barir Chhat	10.9	_	22	314	_	1327.27
60	Rajpairi	11.1	994	1526	2018	53.52	32.24
61	Rangia	10.5	1163	2876	3682	147.29	28.03
62	Ruhinir Chhat	14.3	1917	1850	98	-3.50	-94.70
63	Rupan Chhat	10	19	119	238	526.32	100.00
64	Salbari Chhat Pratham	8	257	312	107	21.40	-65.71
65	Shal Bari Chhat Dwitia	12.2	54	_	_	_	_
66	Sisa Bari	9.8	441	684	1085	55.10	58.63
67	Sivok Hill Forest	23.2	_	510	321	_	-37.06
68	Sivoke Forest	17.4	595	632	1045	6.22	65.35
69	Sukna Pratham Khanda	12.2	1576	_	_	_	_
70	Tari**	8.8	1671	10037	14558	500.66	45.04
71	Thiknikata	7.1	1216	2438	3294	100.49	35.11
72	Tomba	3.5	1874	3687	9632	96.74	161.24
73	Uday Sing	8.1	1038	1362	2092	31.21	53.60
74	Ujanu	4.3	2929	561	660	-80.85	17.65
*village declared as census town in 2001							
**village declared as census town in 2011							
Source: Census of India 1991, 2001 & 2011, Calculated by the Researcher							

Map No. 1 Population growth in Matigara block, 1991-2001



Source: Prepared by the Researcher

Map No. 2 Population growth in Matigara block, 2001-2011



Source: Prepared by the Researcher

During 1991-2001 the highest growth rate in Matigara block was found in Rupan Chhat village, recording a population growth of 526% whereas the lowest growth rate was observed in Damragayer Chhat recording a growth of -98%. On the other hand, in the following decade of 2001-11, highest population growth was observed in Purba Karai Barir Chhat recording a growth rate of 1327% while the lowest growth was witnessed in Jhauguri Chhat, recording a growth rate of -91.58%.

Table No. 9 C.D. block wise village level population & growth of population: Naxalbari block

Sl. No	Name	Distance from S.M.C in km.	Population			Decadal Growth Rate (%)	
			1991	2001	2011	1991-2001	2001-2011
1	Atal	21.5	928	1542	1487	66.16	-3.57
2	Bair Bhita	24.9	128	116	111	-9.38	-4.31
3	Bara Bhita	17.7	110	199	176	80.91	-11.56
4	Bara Chenga	32.5	2292	_	_	_	_
5	Bara Maniram	28.3	771	644	886	-16.47	37.58
6	Baraj Haru	24.3	639	1063	1465	66.35	37.82
7	Batlabari	12.9	1158	1488	1813	28.50	21.84
8	Bauni Bhita	15.1	514	811	932	57.78	14.92
9	Belgachi	28.5	1312	1788	1947	36.28	8.89
10	Bhakat Ram	23.9	295	_	_	_	_

11	Bharat Sing	10.4	333	533	700	60.06	31.33
12	Bhelu	24.1	87	85	564	-2.30	563.53
13	Bhimram**	27.1	3028	9310	11058	207.46	18.78
14	Bhujia Bani	15.5	1276	1047	1487	-17.95	42.02
15	Bhujia Banir Chhat	13	453	2846	2248	528.26	-21.01
16	Birsing	23.7	1099	1289	1380	17.29	7.06
17	Budh Karan	24.8	1417	1608	1632	13.48	1.49
18	Chhota Chenga	29.9	1127	820	754	-27.24	-8.05
19	Chhota Ganja	28.5	5	101	96	1920.00	-4.95
20	Chhota Ganjer Chhat	29.2	146	31	68	-78.77	119.35
21	Chhota Maniram	32	1131	1497	1999	32.36	33.53
22	Dakshin Bagdogra**	16.4	1213	5744	2647	373.54	-53.92
23	Dalkajhar Forest	21.8	_	8318	512	_	-93.84
24	Damdama	23.1	625	1198	1294	91.68	8.01
25	Dayaram	29.3	2498	2505	3182	0.28	27.03
26	Deoan Bhitar Chhat	25.5	41	_	_	_	_
27	Deomani	19.1	850	1088	1735	28.00	59.47
28	Dhakna	29.7	1875	2406	3537	28.32	47.01
29	Dhani Bani	25.7	656	_	_	_	_
30	Dhani Banir Chhat	27.8	_	91	509	_	459.34
31	Dhemal	18	229	338	459	47.60	35.80
32	Dumri Guri**	17.1	2233	10947	13416	390.24	22.55
33	Fakna	27.7	687	1092	1424	58.95	30.40
34	Gaziram	24.2	446	1053	579	136.10	-45.01
35	Geni**	26.6	2805	7080	8747	152.41	23.55
36	Ghusuru	25.2	1126	1389	1373	23.36	-1.15
37	Grammani	24.1	205	484	340	136.10	-29.75
38	Grammanir Chhat	24.3	573	344	476	-39.97	38.37
39	Hoda Bhitar Chhat	28.7	609	979	980	60.76	0.10
40	Huchai Mallik	25	559	698	616	24.87	-11.75
41	Jamidar Guri	26.4	_	716	790	_	10.34
42	Jamidar Gurir Chhat	26.1	123	85	209	-30.89	145.88
43	Jhabar Chhat	29.9	225	164	243	-27.11	48.17
44	Kamala	28.7	2304	3505	4908	52.13	40.03
45	Kamalpur	16	1388	2370	3022	70.75	27.51
46	Ketugabur	28.6	648	1405	1814	116.82	29.11
47	Kilaram	28.4	1285	1584	1931	23.27	21.91
48	Lakshman	19.2	633	_	_	_	_
49	Lakshmaner Chhat	20.6	415	_	_	_	_
50	Lalman**	11.4	2927	5001	6894	70.86	37.85
51	Lohagar Forest	33.2	171	_	_	_	_
52	Lohagar Tea Garden	36.6	1513	_	_	_	_
53	Lohasing	31.5	2152	1339	1363	-37.78	1.79
54	M.M.Terai	25.5	444	1090	1204	145.50	10.46
55	Maha Sing	22.1	529	500	662	-5.48	32.40
56	Mangal Sing	22.1	1300	1859	2327	43.00	25.17
57	Manjha Tea Garden	32.2	968	1145	1323	18.29	15.55

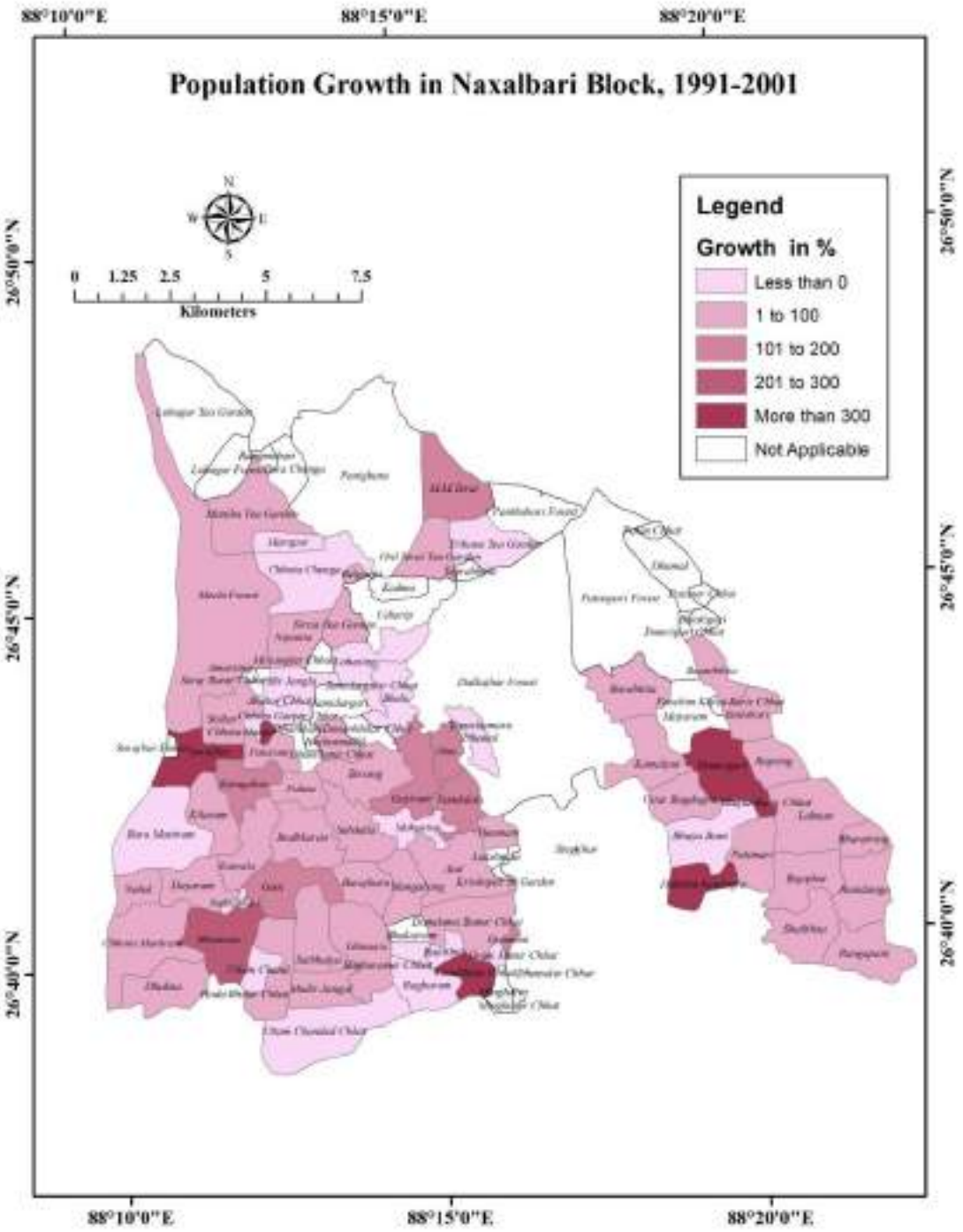
58	Marapur	31	1122	679	738	-39.48	8.69
59	Maya Ram	15.5	89	_	_	_	_
60	Mechi Forest	31.4	118	208	225	76.27	8.17
61	Minghara	25.5	215	_	_	_	_
62	Mingharar Chhat	25.9	190	229	787	20.53	243.67
63	Mir Jangla	29.3	1683	1571	_	-6.65	_
64	Mir Jangler Chhat	31	700	669	_	-4.43	_
65	Mudir Jangal	27.8	686	772	845	12.54	9.46
66	Naksal Bari	28.2	4612	1763	1618	-61.77	-8.22
67	Nandalal	21.6	513	1070	1522	108.58	42.24
68	Nehal	30.5	300	522	731	74.00	40.04
69	Nimu Bhitar Chhat	24.3	37	173	274	367.57	58.38
70	Nipania	30.8	1835	2477	2908	34.99	17.40
71	Omi	23.1	410	1230	1410	200.00	14.63
72	Ord Terai Tea Garden	25	1310	2166	2748	65.34	26.87
73	Panighata	30.4	4036	_	_	_	_
74	Panta Pari Forest	21.3	_	691	434	_	-37.19
75	Pata Ram	40.4	200	213	252	6.50	18.31
76	Putimari	12.7	767	879	1217	14.60	38.45
77	Raghuram	25.7	493	461	481	-6.49	4.34
78	Raghuramer Chhat	25.5	310	119	109	-61.61	-8.40
79	Raja Jhar	13	1534	2126	2590	38.59	21.83
80	Rang Mohan	33.1	794	_	_	_	_
81	Ranga Pani	10.6	1575	2729	3619	73.27	32.61
82	Rani Danga	10.3	3181	3944	4655	23.99	18.03
83	Rupsing	12.8	1838	2573	3499	39.99	35.99
84	Sat Bhaia	25.5	823	950	655	15.43	-31.05
85	Sebdela	24.1	859	866	1276	0.81	47.34
86	Shai Bhita	13.1	1242	1534	1851	23.51	20.66
87	Sirsia Tea Garden	29.5	764	886	245	15.97	-72.35
88	Siubar	29.4	761	879	1052	15.51	19.68
89	Surajibar	30	12	204	235	1600.00	15.20
90	Tarabari	15.9	148	151	163	2.03	7.95
91	Tarabarir Chhat	18.3	17	2	10	-88.24	400.00
92	Teprabhola	23.4	630	_	_	_	_
93	Tepuchamaru	24.5	598	_	_	_	_
94	Trihana Tea Garden	22.9	2431	2039	2016	-16.13	-1.13
95	Udiarip	26.7	_	_	663	_	_
96	Uttam Chand	28	491	457	569	-6.92	24.51
97	Uttam Chanded Chhat	33.1	645	574	538	-11.01	-6.27
98	Uttar Bagdogra (Ct)*	14.8	12064	15774	12064	30.75	-23.52

*village declared as census town in 2001

**village declared as census town in 2011

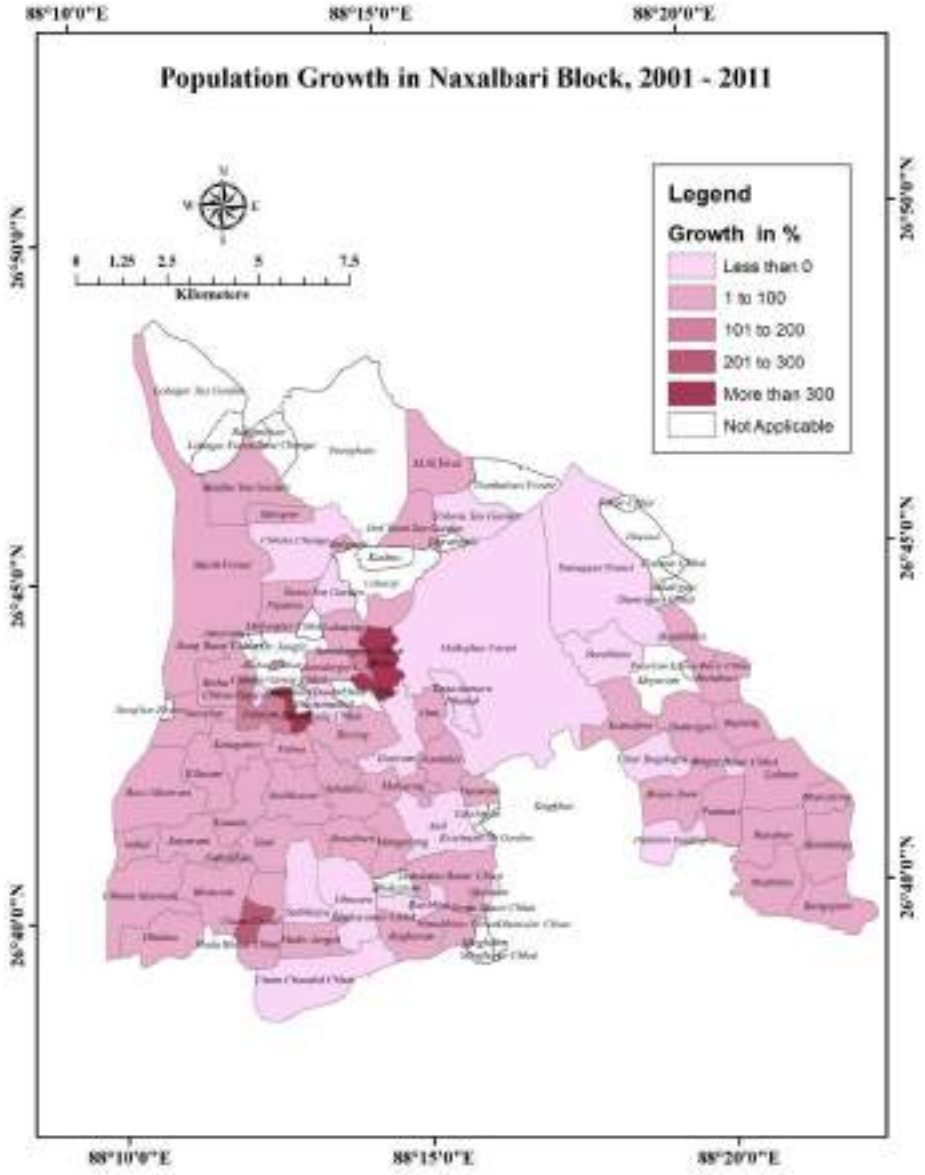
Source: Census of India 1991, 2001 &2011, Calculated by the Researcher.

Map No. 3 Population growth in Naxalbari block, 1991-2001



Source: Prepared by the Researcher

Map No. 4 Population growth in Naxalbari block, 2001-2011



Source: Prepared by the Researcher

During 1991-2001, the highest growth rate of population in Naxalbari block was observed in Chhota Ganja village recording a population growth of 1920% whereas the lowest growth rate was observed in Chhota Ganja Chhat recording a growth of -78.77%. On the other hand, in 2001-11 decade the highest population growth was observed in Bhelu recording a growth rate of 564% and the lowest growth was found in Dalkajhar Forest recording a growth rate of -93.84%.

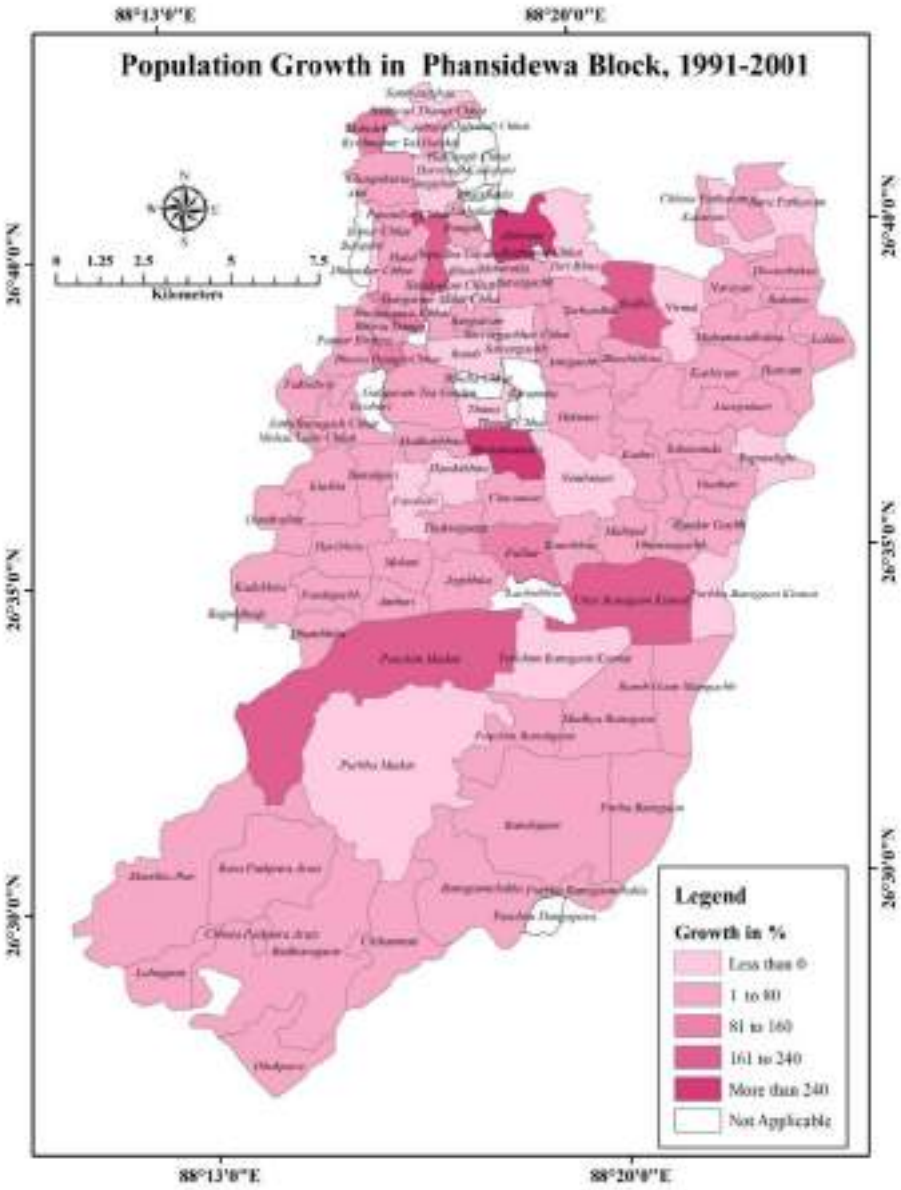
Table No. 10 C.D. block wise village level population & growth of population: Phansidewa block

Sl. No	Name	Distance from SMC in km.	Population			Decadal Growth Rate (%)	
			1991	2001	2011	1991-2001	2001-2011
1	Abhiram	18.1	497	1976	1773	297.59	-10.27
2	Ambari	12.1	933	1041	1371	11.58	31.70
3	Anti Gachh	16.9	778	820	2027	5.40	147.20
4	Bandar Gachh	22	2941	3825	3891	30.06	1.73
5	Bandi	21.8	1709	685	493	-59.92	-28.03
6	Bandia Chhat	22.7	_	124	961	_	675.00
7	Bangaru	23.1	1819	_	_	_	_
8	Bans Gaon	30.6	3515	4615	5958	31.29	29.10
9	Bansgaon Chakla	34.8	3031	3940	3876	29.99	-1.62

10	Bansh Gaon Mangachh	25.9	589	614	724	4.24	17.92
11	Banur Chhat	21.5	259	313	446	20.85	42.49
12	Bara Paikpara Arazi	41.2	4075	5123	6899	25.72	34.67
13	Bara Pathu Ram	9.5	2557	2247	2728	-12.12	21.41
14	Barai Gachh	19.7	617	875	427	41.82	-51.20
15	Baramala	24.2	_	368	1799	0.00	388.86
16	Bhala Manashi	25.3	855	3135	2951	266.67	-5.87
17	Bharia Danga	24.5	137	153	_	11.68	0.00
18	Bharia Dangir Chhat	24.8	88	175	190	98.86	8.57
19	Bhisti	23.1	1994	400	459	-79.94	14.75
20	Bhuban Gurir Chhat	23	328	694	870	111.59	25.36
21	Bhushi Bhita	17.1	717	876	1011	22.18	15.41
22	Budharu Gaon	42	3901	5317	6841	36.30	28.66
23	Chaupukuria	20.5	2252	2778	1724	23.36	-37.94
24	Chhota Paikpara Arazi	40.7	482	712	763	47.72	7.16
25	Chhota Pathu Ram	8.3	888	1476	1918	66.22	29.95
26	Chikan Mati	44.7	536	738	2480	37.69	236.04
27	Churaman	25.9	607	948	842	56.18	-11.18
28	Dalur Chhat	20.7	433	560	786	29.33	40.36
29	Dandra Jhar	33.3	519	663	1050	27.75	58.37
30	Dhak Para	47.4	1990	2682	3322	34.77	23.86
31	Dhakna Gachh	32.7	146	133	184	-8.90	38.35
32	Dham Bhita	32	173	232	728	34.10	213.79
33	Dhamna Gachh	20.9	1500	1790	2356	19.33	31.62
34	Dhemaler Chhar	23.3	474	337	644	-28.90	91.10
35	Dwara Baksa	12	562	726	1161	29.18	59.92
36	Fakir Dwip	29.1	589	813	948	38.03	16.61
37	Farabari	29.5	1594	1488	1405	-6.65	-5.58
38	Foudi Gachh	30.3	627	949	787	51.36	-17.07
39	Fulbar	23.7	804	1487	1279	84.95	-13.99
40	Ganga Ram Tea Garden	24.1	2338	2792	2793	19.42	0.04
41	Gangaram Maler Chhat	21.1	405	104	109	-74.32	4.81
42	Guabari	19.2	1111	1816	2203	63.46	21.31
43	Halal	21.5	1195	1532	1511	28.20	-1.37
44	Haoda Bhita	27.3	2849	931	736	-67.32	-20.95
45	Hari Bhita	30.1	855	1084	1042	26.78	-3.87
46	Hatiram	14	820	980	1421	19.51	45.00
47	Hela Kadam Chhat	25.1	50	6	289	-88.00	4716.67
48	Hetmuri	19.4	1726	2141	2124	24.04	-0.79
49	Jabarali	16.6	796	1004	1836	26.13	82.87
50	Jogi Bhita	29.1	1671	2089	2221	25.01	6.32
51	Kadmi	20.5	817	991	1256	21.30	26.74
52	Kadopani	16	_	357	1206	_	237.82
53	Kadu Bhita	33.7	416	446	205	7.21	-54.04
54	Kalaram	10.4	1624	2105	2463	29.62	17.01
55	Kanti Bhita	30.7	560	915	645	63.39	-29.51
56	Kashi Ram	15.2	1959	2009	2372	2.55	18.07
57	Krishnapur Tea Garden	17.4	_	84	405	_	382.14
58	Kuchia	29	940	1270	1360	35.11	7.09
59	Lachubhita	25.3	-	764	1260	_	64.92
60	Lahu Gaon	44	7056	9959	12710	41.14	27.62
61	Laldas	12.1	640	752	738	17.50	-1.86
62	Liusi Pukuri	16.5	3967	4378	5185	10.36	18.43
63	Madhab Bhita	25.1	690	912	1090	32.17	19.52
64	Madhya Bansgaon	25.6	6014	7411	9132	23.23	23.22
65	Mahammad Baksa	13.7	1396	1779	2913	27.44	63.74
66	Mahideb	18.1	84	158	40	88.10	-74.68
67	Mahipal	23.1	1044	1549	1887	48.37	21.82
68	Mandila Jhar	44.5	4307	6444	6642	49.62	3.07

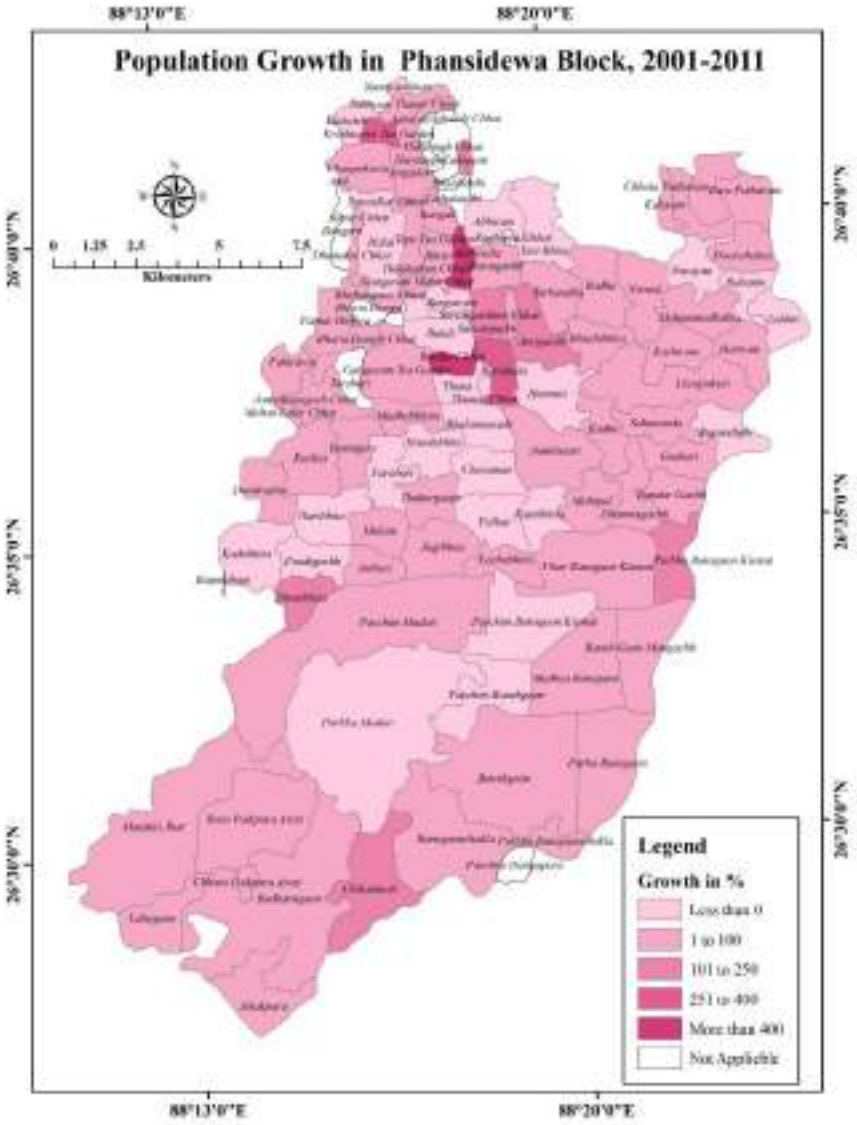
69	Meherulla	19.8	1071	214	1501	-80.02	601.40
70	Mohan Laler Chhat	34.3	152	220	307	44.74	39.55
71	Molani	28.5	1778	1956	3020	10.01	54.40
72	Muktar Chhat	21.9	17	24	18	41.18	-25.00
73	Narayan	13.2	1119	1566	695	39.95	-55.62
74	Nembutari	27.4	1181	725	776	-38.61	7.03
75	Nirmmal	13.2	2311	2227	2557	-3.63	14.82
76	Nitu Bhita Chhat	22.2	443	_	_	_	_
77	Panaullar Chhat	19.9	47	193	309	310.64	60.10
78	Paschim Bansgaon Kismat	26.9	3728	2560	1644	-31.33	-35.78
79	Paschim Bansh Gaon	28	1665	1993	1313	19.70	-34.12
80	Paschim Madati	37.1	3916	10772	13523	175.08	25.54
81	Pathar Hir Hira	27.2	431	497	502	15.31	1.01
82	Pathar Hir Hirar Chhat	26.2	980	3342	4039	241.02	20.86
83	Purba Bans Gaon	28.5	2224	2907	3859	30.71	32.75
84	Purbba Bansgaon Chakla	31.8	976	1302	1756	33.40	34.87
85	Purbba Bansgaon Kismat	22.1	2465	882	2184	-64.22	147.62
86	Purbba Madati	35.5	8926	6571	6424	-26.38	-2.24
87	Radha	14.4	596	1653	1932	177.35	16.88
88	Rahamu	11.8	557	709	702	27.29	-0.99
89	Rangali	31.4	368	455	617	23.64	35.60
90	Rupandighi	18.3	1488	1099	724	-26.14	-34.12
91	Sahananda	18.3	991	1212	1916	22.30	58.09
92	Sanga Tram	21.6	125	135	85	8.00	-37.04
93	Sannyasi Thaner Chhat	16.9	1424	915	930	-35.74	1.64
94	Sarcar Gachh	20.8	509	689	808	35.36	17.27
95	Sarcar Gachher Chhat	21.1	988	32	664	-96.76	1975.00
96	Sastu Gachh	32.5	448	552	634	23.21	14.86
97	Singi Jhor	18.1	966	643	1066	-33.44	65.79
98	Tarabari	15.5	-	_	289	_	_
99	Tar Bandha	15.7	1001	1271	1415	26.97	11.33
100	Tentul Guri	31.1	586	772	916	31.74	18.65
101	Tepu Tea Garden	22.2	660	2182	2438	230.61	11.73
102	Thakur Ganja	27.8	1441	1926	2571	33.66	33.49
103	Thuna	22.7	1150	1145	1070	-0.43	-6.55
104	Thunar Chhat	23.1	-	447	319	_	-28.64
105	Turi Bhita	20.4	1147	931	69	-18.83	-92.59
106	Uttar Bansgaon Kismat	23	1324	4199	5064	217.15	20.60
Source: Census of India 1991, 2001 &2011, Calculated by the Researcher.							

Map No. 5 Population growth in Phansidewa block, 1991-2001



Source: Prepared by the Researcher

Map No. 6 Population growth in Phansidewa block, 2001-2011



Source: Prepared by the Researcher

During 1991-2001 the highest growth rate in Phansidewa block was found in Panaullar Chhat village recording a population growth of 310.64% whereas the lowest growth rate was observed in Sarcargachher Chhat recording a growth of -96.76%. On the other hand, in 2001-11, the highest population growth was observed in Helakadam Chhat with a growth rate of 4716.67 % and the lowest growth rate of -74.76% was recorded in Mahideb.

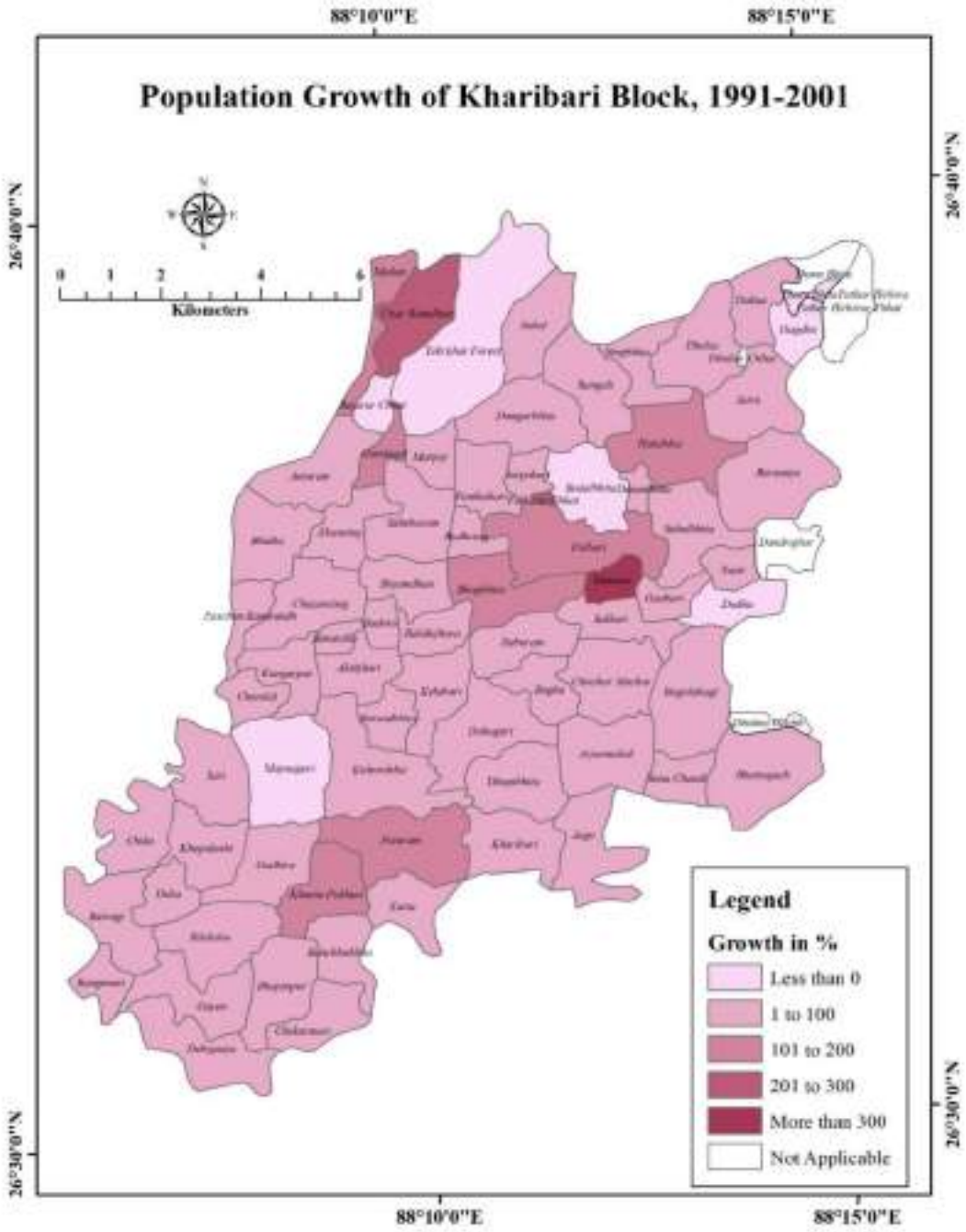
Table 11 C.D. block wise village level population & growth of population: Kharibari block

Sl. No	Name	Distance from SMC in km.	Population			Decadal Growth Rate %	
			1991	2001	2011	1991-2001	2001-2011
1	Alokjhari	38.5	279	395	529	41.58	33.92
2	Antaram	36.3	251	276	536	9.96	94.20
3	Arjanmahal	35.3	1016	1136	1488	11.81	30.99
4	Badal Bhita	35.7	785	501	408	-36.18	-18.56
5	Badora	37.6	209	264	329	26.32	24.62
6	Bagha	39.8	587	846	943	44.12	11.47
7	Bagula Hagi	35.2	586	692	813	18.09	17.49
8	Bairagi	47.8	1312	1514	1961	15.40	29.52
9	Bajarur Chhat	33.6	114	95	192	-16.67	102.11
10	Balahi Jhora	37.6	923	1301	1398	40.95	7.46
11	Banchha Bhita	42.4	710	1045	1463	47.18	40.00
12	Barsad Bhita	41.3	1781	2208	2671	23.98	20.97

13	Bhajanpur	44.2	1213	1774	2401	46.25	35.34
14	Bhatta Gachh	34.1	427	459	601	7.49	30.94
15	Bhog Bhita	36.4	1127	2535	2991	124.93	17.99
16	Bhulka	39.5	230	273	306	18.70	12.09
17	Bilakshu	45	361	454	762	25.76	67.84
18	Budh Sing	35.4	325	641	824	97.23	28.55
19	Bura Ganja	30.5	475	649	616	36.63	-5.08
20	Chayan Sing	37.4	1369	1871	2158	36.67	15.34
21	Chchur Muchur	38.4	997	1467	1682	47.14	14.66
22	Chekar Mari	43.8	630	709	876	12.54	23.55
23	Chiku	46.2	246	344	435	39.84	26.45
24	Chunilal	44.8	854	950	1192	11.24	25.47
25	Dagdhu	27.7	899	109	29	-87.88	-73.39
26	Dakua	27.3	318	447	508	40.57	13.65
27	Dangar Bhita	32.4	1327	1661	2207	25.17	32.87
28	Debi Ganja	47.1	1216	1837	2042	51.07	11.16
29	Debu Ram	38.3	890	1020	968	14.61	-5.10
30	Deoan Bhita	34.5	281	455	857	61.92	88.35
31	Dhulia	34.2	884	1126	1303	27.38	15.72
32	Dhupi Bhita	38.2	2179	3059	3518	40.39	15.00
33	Doha Guri	39.5	963	1135	1405	17.86	23.79
34	Duba	46.7	354	513	695	44.92	35.48
35	Dudha	34.3	621	322	379	-48.15	17.70
36	Ful Bari	36.7	125	266	810	112.80	204.51
37	Ful Barir Chat	34.9	84	260	171	209.52	-34.23
38	Gadhira	43.9	772	948	1164	22.80	22.78
39	Gandagal	34.4	1553	3120	4363	100.90	39.84
40	Gayen	45.9	997	1203	1469	20.66	22.11
41	Gua Bari	37.3	225	274	343	21.78	25.18
42	Hati Doba	33.5	853	1779	1962	108.56	10.29
43	Jagir	37.4	1108	1434	1662	29.42	15.90
44	Jama Tulla	38	400	442	506	10.50	14.48
45	Jatru	29.2	544	694	1008	27.57	45.24
46	Jiban Sing	37.1	516	866	1471	67.83	69.86
47	Jor Pakari	35.5	237	367	431	54.85	17.44
48	Katia	41	965	1592	1736	64.97	9.05
49	Kelabari	37.7	1520	2010	2562	32.24	27.46
50	Khari Bari	37.3	3943	5442	6660	38.02	22.38
51	Khopalashi	45.9	656	675	779	2.90	15.41
52	Khunia Pukhari	42	824	1955	2275	137.26	16.37
53	Kishor Doba	41.2	2427	2995	3653	23.40	21.97
54	Kungar Pur	39.8	403	444	498	10.17	12.16
55	Madan	32.2	82	213	236	159.76	10.80
56	Manasa	39.5	72	963	600	1237.50	-37.69
57	Manjaya	33.9	466	621	1906	33.26	206.92
58	Mayna Guri	42.8	2080	1325	1704	-36.30	28.60
59	Nazir	38.2	277	280	313	1.08	11.79
60	Pantha Bari	34.6	828	1000	607	20.77	-39.30
61	Paschim Ram Bandh	41	339	600	763	76.99	27.17
62	Pata Ram	40.4	1325	3276	4141	147.25	26.40
63	Rang Muni	48	693	1086	1411	56.71	29.93
64	Rangali	31.4	1536	1842	2425	19.92	31.65
65	Saheburam	35.9	1501	1724	1897	14.86	10.03
66	Salbari	38.9	268	344	538	28.36	56.40
67	Shyamdhan	37	2616	4708	5192	79.97	10.28
68	Sing Bhita	32.8	414	489	536	18.12	9.61

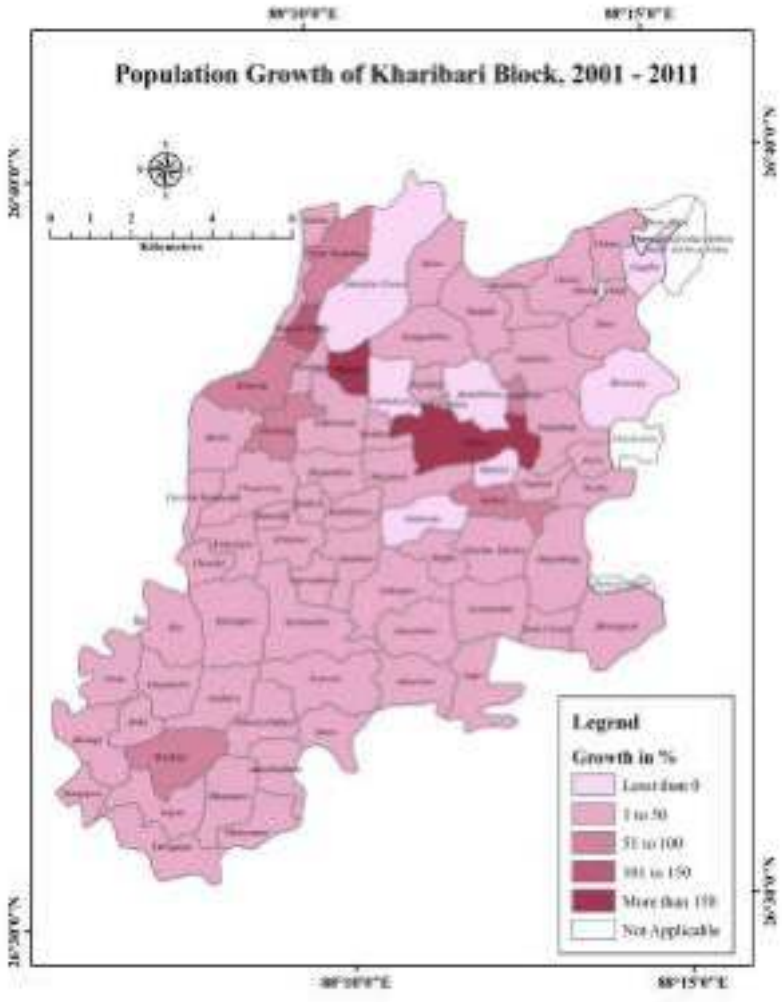
69	Sona (Chalani) Chandi	34.5	1450	1488	1751	2.62	17.67
70	Subal	30	246	280	394	13.82	40.71
71	Subal Bhita	35.6	677	959	1022	41.65	6.57
72	Tari	44.6	1064	1319	1736	23.97	31.61
73	Tharu Bhita	25.6	1216	242	89	-80.10	-63.22
74	Tukriajhar Forest	34.3	709	94	89	-86.74	-5.32
75	Uttar Ramdhan	32.3	1262	4528	6892	258.80	52.21
**village declared as census town in 2011							
Source: Census of India 1991, 2001 & 2011, Calculated by the Researcher.							

Map No. 7 Population growth of Kharibari block, 1991-2001



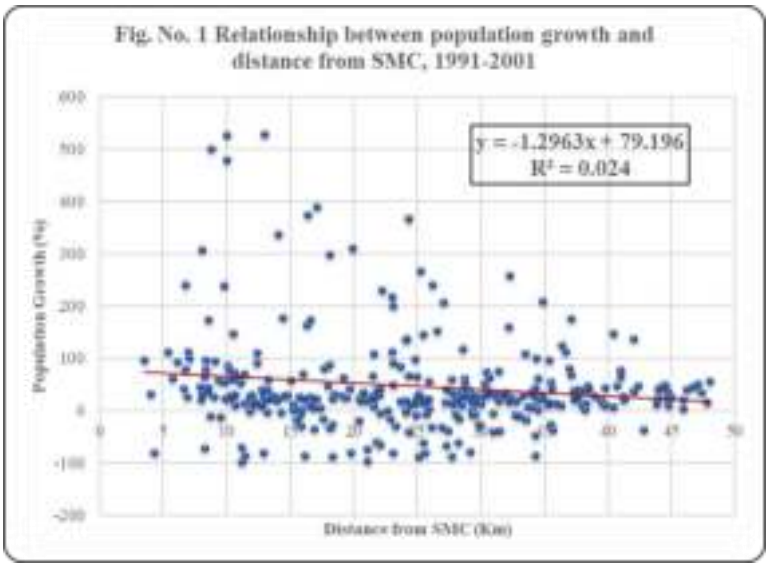
Source: Prepared by the Researcher

Map No. 8 Population growth of Kharibari block, 2001-2011



Source: Prepared by the Researcher

During 1991-2001 the highest growth rate in Kharibari block was experienced by Manasa village recording a population growth of 1237.50% whereas the lowest growth rate was observed in Dagdhu recording a growth of -87.80%. On the other hand, in 2001-11 decade the highest population growth was observed in Manjaya recording a growth rate of 206.92 % and the lowest growth rate was found in Dagdhu recording a growth rate of -73.39%.



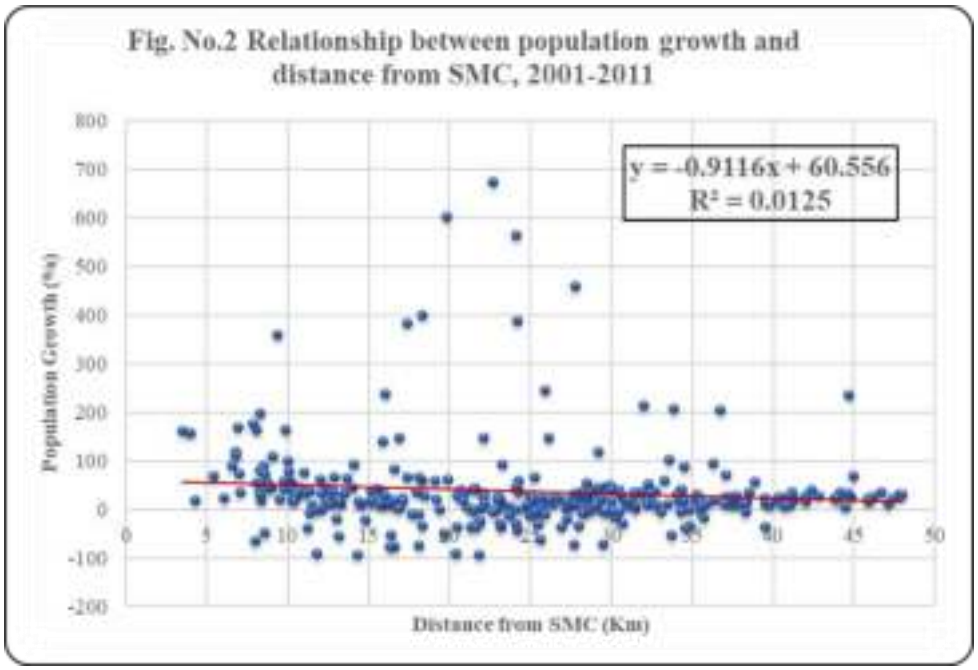


Figure 1 and 2 shows the relationship between distance from Siliguri Municipal Corporation and decadal growth rate of population for each village within the study area during 1991-2001 and 2001-2011 respectively. While calculating the regression equation and determining the R^2 value some villages with abnormally high decadal population growth has been left out deliberately. From the figures it can be observed that in Siliguri sub-division during 1991–2001 and 2001-2011, the distance from Siliguri Municipal Corporation and decadal growth rate of population for each village in the study area are independent of one another. The regression coefficient between these two variables validates the inference. Moreover, the coefficient of determination calculated was less than 2%, which means that less than 2% of variation in the decadal growth rate of population for each village can be explained by variation in distance from Siliguri Municipal Corporation. Therefore, other factors are more important in determining the decadal growth rate of population among the villages of the study area and distance from Siliguri Municipal Corporation does not have any significant influence in determining the population growth. Therefore, the first hypothesis taken for this study that with an increase in distance from Siliguri Municipal Corporation the population growth in rural settlements decrease is rejected and it can be said that distance from Siliguri Municipal Corporation does not have any influence in determining the decadal growth rate of population of the rural settlements in the study area.

Conclusion

Therefore, the major objective of this chapter was to analyze the growth of rural and urban settlement within the study area. To full fill this objective, the population growth was analyzed from 1991 to 2001 based on census data. The analysis was done for the four blocks, i.e. Matigara, Naxalbari, Phasidewa, Kharibari as well as Siliguri Municipal Corporation. The analysis shows that population growth in the study area has been very rapid from 1991 to 2011. However, the decadal growth of population was not uniform for all the blocks. Matigara block located closest to Siliguri Municipal Corporation witnessed very high population growth both during 1991- 2001 and 2001 -2011. This is due to the fact that population spillout from Siliguri Municipal Corporation to its surrounding areas has been taking place very rapidly from 1991 onwards. On the other hand, Phansidewa and Kharibari block located farthest from Siliguri Municipal Corporation have recorded relatively less population growth. Siliguri Municipal Corporation during 1991- 2001 more than doubled its population due to addition of adjoining area within its boundary but during the next decade it witnessed a very moderate population growth.

The size class classification of rural settlements within the study area was also done for each blocks. It was seen that Matigara and Naxalbari block saw a decrease in their total number of villages from 1991 to 2011, because during this period many villages were converted to census towns in these two blocks. However, for Phansidewa and Kharibari, the total number of villages from 1991 to 2011 did not change very much. Another interesting fact which requires attention is that the number of villages in the lowest four size classes have declined considerably in the study area in 2011 compared to 1991, but for the largest three size classes an opposite trend was visible.

At the village level there is a lot of variation in decadal population growth. Therefore, to analyze the growth of population for villages in the study area, decadal population growth of individual villages was computed for 1991-2001 and 2001-2011. While calculating the decadal population growth of villages, there was problem with some village which existed in one or two of the three census years under consideration. The village level population data shows there are some villages with very high decadal growth (over 1000%) in the study area. Negative population growth in villages of the study area is not uncommon. Some villages with very less population size has witnessed nearly 100% negative population growth which may be the result of a combination of factors like out migration and natural calamity. However, there is no significant relation between the distance of any village from Siliguri Municipal Corporation and their decadal population growth.

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This is to certify that Prof./Dr./Mr./Mrs./Ms. Tuhin Dey Roy, Research Scholar of Department of Geography and Applied Geography, NBU attended the ICSSR-ERC Sponsored National Seminar on **Sustainable Urbanization in East India: Present Trends and Future Concerns**, organized by the Department of Geography, Siliguri Mahila Mahabidyalaya, Siliguri held during March 9-10, 2019. He/She has presented a research paper/ delivered special lecture entitled:

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