Original Research Article

Growth and Pattern of Urbanisation : An Analysis of Barasat Subdivision, North 24 Parganas, West Bengal.

ABSTRACT

Urbanisation is one of the most significant development process affecting the modern world particularly the developing countries. However often the pattern and level of urban development are highly variable both spatially and temporally. Barasat subdivision comprises the sadar subdivision of the district of North 24 Parganas in West Bengal. This district traditionally has a glorious history of urbanisation being much higher than both the state and national averages. Within the district, this subdivision has shown a slow and steady growth of urbanisation since independence. Although the percentage of urban population has remained below the district average it has been significantly higher than the state and national average.. The study aims to find out the trends, levels of urbanisation and spatio-temporal pattern of urbanisation in the study area using quantitative and qualitative techniques Mostly secondary data sources have been used.The study reveals that there are significant spatio-temporal variation in levels of urbanisation within the subdivision. The subdivision was overshadowed in the urban scenario mainly due to the overwhelming presence of neighbouring Barrackpore subdivision till 1981. The situation has significantly altered after Barasat being declared the district headquarter in 1986.

KEY WORDS: Level of urbanisation, urban spacing, urban population density

1. INTRODUCTION

Urbanization refers to an increase in the size of urban places and growth in the number with increasing concentration of population in such places (Hauser,M.P.and Duncan,O.D, 1954) . The phenomena of high level of urbanization at the global level specially in the developing countries is relatively a recent phenomena and has gained unprecedented momentum since the 1950's. Today, 55% of the world's population lives in urban areas, a proportion that is expected to increase to 68% by 2050. Projections show that urbanization combined with the overall growth of the world's population could add another 2.5 billion people to urban areas by 2050, with close to 90% of this increase taking place in Asia and Africa (UN,2018). Towns and cities in the third world are growing much more quickly than cities like London, Paris and New York did during and after the Industrial Revolution in the 18th and 19th centuries. This is giving rise to an urban explosion in the Third World.(Potter,R,1992). The *2018 Revision of World Urbanization Prospects* produced by the Population Division of the UN Department

of Economic and Social Affairs (UN DESA) notes that future increases in the size of the world's urban population are expected to be highly concentrated in just a few countries. Together, India, China and Nigeria will account for 35% of the projected growth of the world's urban population between 2018 and 2050. By 2050, it is projected that India will have added 416 million urban dwellers, China 255 million and Nigeria 189 million. This rapid urban explosion is highly unsustainable and creating numerous problems in the developing countries.The World Cities Report,2016, unequivocally demonstrates that the current urbanization model is unsustainable in many respects. It conveys a clear message that the pattern of urbanization needs to change in order to better respond to the challenges of our time, to address issues such as inequality, climate change, informality, insecurity, and the unsustainable forms of urban expansion (World Cities Report,UN-HABITAT,2016)

Urbanization in India has shown remarkable progress particularly in the post –independence period. Urban population has increased from 10.84% in 1901 to 17.29% in 1951 to about 31.16% in 2011(Census of India, 2011). With 377.16 million urban people, India is the second largest urban populated country and shares 11% ofworld's urban population and it is expected to increase by 13% by the year2030(Ministry of Housing ad Urban Poverty Alleviation, MHUPA,2016). With dwindling job opportunities, vagaries like drought, flood, fluctuating crop price in agricultural sectors, urban centres have served as magnet for attracting rural crowd. The situation is identical in the study area, Barasat subdivision. Urban growth, often unplanned, is taking a toll on the physial and socio-economic environment of the urban areas. Hence it is pertinent to understand and analyse the spatio-temporal growth of urban population in an area in order to examine its effects. It will help to identify the areas where urban growth is minimal. Steps can then be taken to promote infrastructural and other facilities in those areas for a more balanced and sustainable urban development. Many studies on the urbanisation process in the district of North 24 Parganas has been taken up. S.Paul and K.Chatterjee(2012) have attempted to study the urbanisation and consistency measurement in the district of North 24 parganas. D.Bhattacharjee and S. Hazra(2018) have attempted to study the role of urban momentum in transformation of North 24 parganas district. However little attempt has been made to study the urbanisation process separately in the different subdivisions of the district. The subdivision, being the sadar division, has shown significant increase in urban population in the last century although spatial variations do exist within the subdivision. Hence a study of the dynamics of urbanisation in this subdivision has been attempted. The present study aims to provide an insight into the temporal and spatial dimensions of change in the urbanization pattern in this area in the last seven census decades . The study aims to provide a strong base and bridge the knowledge gap and pave way

for further research for a more balanced and sustainable growth of urban development in the study area without adversely affecting the environment.

2. STUDY AREA

Barasat subdivision constitutes an important part of North Twenty parganas. The district headquarter, Barasat, is located in the study area. The latitudinal extent is from 22^0 32'21''N to 22^0 57'36'' N while the longitudinal extent is from $88^0$25'40''E to $88^0$48'29''E. In the south, lies parts of Bidhannagar subdivision of North 24 parganas and Baruipur subdivision of South 24 parganas while the northern boundary is flanked by Nadia district. The blocks of Gaighata, Baduria, Bashirhat and Haroa form the eastern boundary while Barrackpur subdivision forms the western boundary. The total area of the subdivision is 1002.48 Sq. Kilometers with a population of 2,789,611(Census 2011). It is well connected by road and railways. A project regarding further extension of the Metro services to the towns of Barasat in the near future is under construction.

The study area consists of six municipalities namely Barasat, Habra, Rajarhat Gopalpur, Ashoknagar, Kalyangarh, Madhyamgram and Gobardanga. It has seven Community Development(C.D.) blocks: Barasat–I, Barasat–II, Amdanga, Deganga, Habra–I, Habra–II and Rajarhat. These seven blocks contain eight census towns and 58 gram panchayats. The subdivision has its headquarters at Barasat.

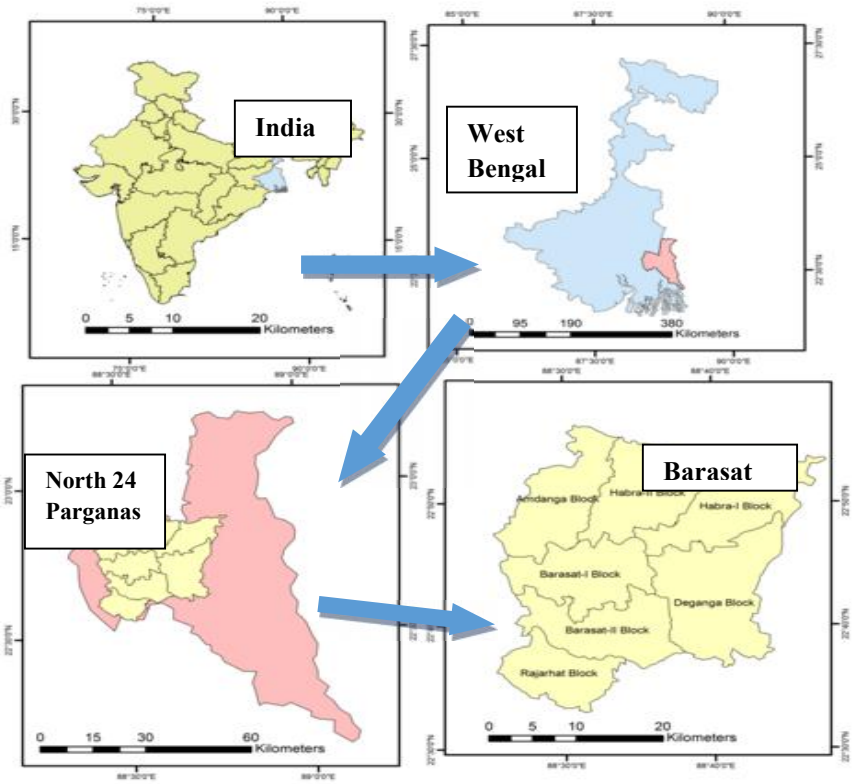


FIGURE 1: Location of study area.

2. OBJECTIVES-

The main objective of the study is to understand the growth and pattern of urbanisation in the study area in the post –independence census period so that the spatio-temporal variations can be identified to promote a more balanced and sustainable urban growth.

The objectives of the study are-

- Analyse the trends and patterns of urbanization in the subdivision in the post-independence period during the last seven census decades(1951-2011)
- Study the level of urbanisation in the study area on the basis of some selected variables in the last seven decades .
- Determine the spatio-temporal pattern on the basis of level of urbanisation in Barasat subdivision during this period.

4. MATERIALS AND METHODOLOGY –

The study is primarily based on secondary data sources. Both qualitative and quantitative approaches have been used in the study. The study involved collection of data from various published sources mainly involving the census data for the last 7 census years. Data has been collected from different sources like District Census Handbooks of North 24 parganas for the years 1951, 1961, 1971, 1981, 1991 and Compact discs of 2001, 2011, published by Census of India. Data thus collected from the various census reports were compiled, tabulated and necessary calculations were done as per requirement.

The data after compilation and necessary calculation were presented in the form of maps, graphs and charts with the help of Statistical and GIS Softwares. Analysis has been done both quantitatively and qualitatively. Various quantitative methods like Mean, Standard deviation, Z score and Composite scores have been used for data analysis. Statistical analysis has been done using MS-Excel. Maps have

been prepared to show the spatio-temporal variation of urbanisation in the subdivision.. All the GIS related analysis was done in ArcGIS 10.2 software.

Barasat Sub-Division Map was initially scanned at 300 dots per inch (DPI) resolution and converted into computer-readable Tagged Image File Format (.tiff) files. These .tiff files were then georeferenced using ArcGIS 10.2 Software with WGS 84 datum and Universal Transverse Mercator (U.T.M.) projection. Digitization of administrative boundary and selected features like major roads, railways, canals was done through ArcGIS 10.2 Software. Furthermore, population attributes has been attached with the shapefile of Barasat Sub-Division. Finally, population density map of Barasat Sub-Division was prepared in ArcGIS 10.2 Software.

5. RESEARCH FINDINGS AND DISCUSSION

5.1 Growth of urbanisation- Urbanisation is a process influenced by social, political and economic factors and urban development have statistically shown as being epicenters of economic growth resource development and occupational opportunities(Will, 2011). The Indian subcontinent shares with Mesopotamia and the Nile valley, a long history of urbanization. Urbanization continued at a much slower pace through the medieval period and started gaining momentum gradually during the colonial period. The phenomenon has shown remarkable progress in the post-independence period. After 1947 urban population is increasing by leaps and bounds, often faster than the global urban growth rate. Urban population has increased from 10.84% in 1901 to 17.29% in 1951 to 31.16% in 2011(Census of India, 2011). Similarly in the post –independence period the state of West Bengal in general, and the district of North 24 parganas in particular, has experienced a massive spurt in urban growth. The growth in the percentage of urban population in both has far exceeded the national average.

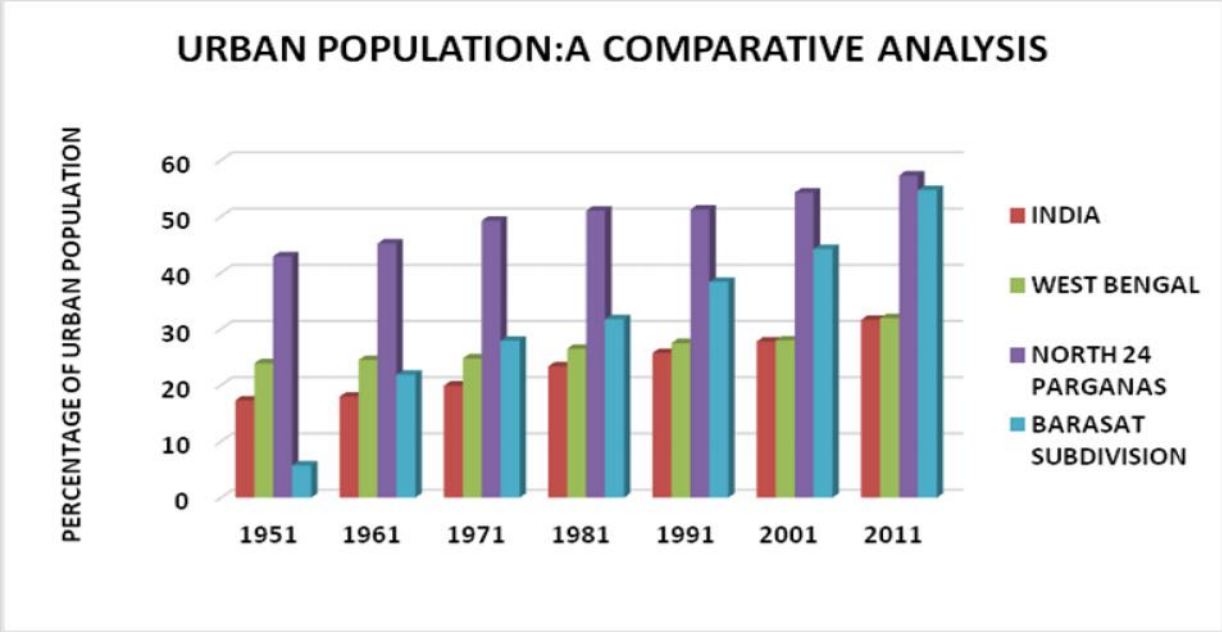


Figure 2: Comparative growth of urban population.

The above figure depicts the comparative growth of urban population in India, West Bengal, North 24 Parganas and Barasat subdivision in the post independence period. Percentage of urban population has shown a steady increase since independence more remarkably since 1991. The percentage of urban population in India has increased from 17.29 to 31.61 while it has risen from 23.88 to 31.89 in the state of West Bengal. West Bengal has shown a slightly higher degree of urbanization as compared to the national average. One of the causes for this trend can be attributed to the colonial legacy of the state. Another cause is the influx of migrant population in the aftermath of partition in 1947 and creation of the new nation of Bangladesh in 1971. Sarkar ,J.P (2006) identified four districts of West Bengal viz. North 24 parganas, Nadia, Hooghly and Burdwan which maintained high population growth rate since independence. The district of North 24 parganas has shown a higher degree of urbanization as compared to both national and state average. It has been experiencing a very high pace of urbanization both in terms of volume of urban population and number of urban centres. Urban population has increased from 42.92% in 1951 to 57.27% in 2011. The total urban population in the district has increased from 967790 in 1951 to 5807128 in 2011 implying about a six fold increase during the last six decades. According to Bhattacharyee,D. and Hazra,S.(2018) urban momentum has played a crucial role in transformation of North 24 parganas

Within the district, Barasat subdivision depicts an interesting picture in terms of urban growth. Here urban population has increased from 5.72% to 54.67% during the same time period. Predominantly

being an agrarian belt, the region had a very low percentage of urban population at the time of independence and thereafter for a considerable period of time. The process of urbanization started gaining momentum since 1961. Urban population percentage steadily increased thereafter and crossed the state average in 1971. The granting of subdivisional headquarter status to Barasat has further aided the process. Although the subdivision has lower percentage of urban population as compared to the district average but it is far above the state and national average. The following table depicts the change in rural and urban population in the district along with the study area during the census years 1951-2011.

Table 1- Comparative growth of urban and rural population in North 24 parganas and Barasat subdivision

	Percentage of population				Change in percentage of population			
	North 24 pgs		Barasat Subdivision		North 24 pgs		Barasat Subdivision	
Years	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
1951	42.92	57.08	5.72	94.28	-	-	-	-
1961	45.18	54.82	21.86	78.14	47.34	34.47	520.12	34.55
1971	49.26	50.74	27.91	72.09	45.26	23.31	79.41	29.64
1981	51.03	48.97	31.72	68.28	36.37	27.03	53.26	27.71
1991	51.31	48.69	38.36	61.64	32.06	30.58	79.59	34.09
2001	54.29	45.71	44.23	55.77	30.04	15.36	45.50	14.18
2011	57.26	42.73	54.67	45.33	18.16	4.76	51.80	-0.16

Source: Computed by the authors from different census reports, 1951-2011

The total number of towns has also grown in the entire subdivision. The number of towns has increased from 2 in 1951 to 27 in 2011 along with six municipalities. Contrarily the number of village across various police stations has shown a continuous decrease over the years. The following table shows the change in the number of villages and urban centres in the subdivision-

Table 2. Change in the no. Of villages, urban centres in Barasat subdivision

Year	No. Of Villages	No. of Urban Centres	Percentage Increase Of Urban Centres	Urban-Rural Ratio

1951	596	2	-	0.06
1961	577	6	200	0.28
1971	567	10	66.67	0.39
1981	555	11	10	0.46
1991	545	19	72.73	0.62
2001	520	13	-31.58	0.79
2011	492	33	153.85	1.21

Source : Computed by the authors from District census handbooks, North 24 parganas, Census of India.

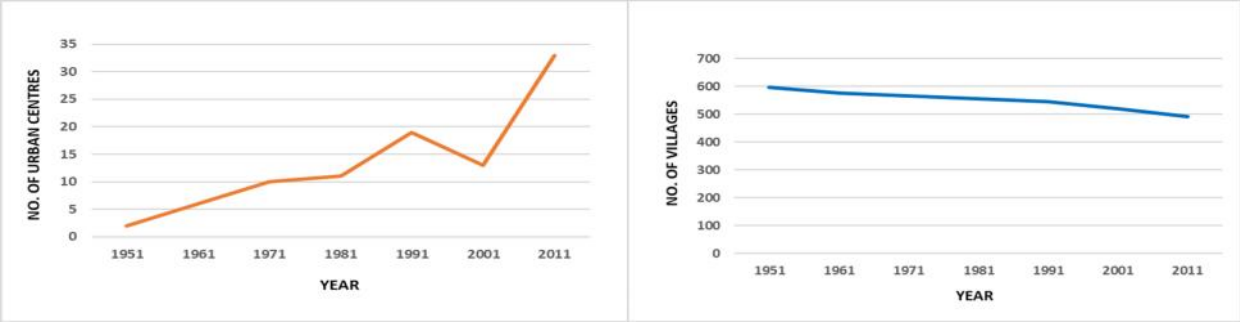


Figure 3: Change in the no. of villages and urban centres in Barasat subdivision (1951-2011)

Most remarkable decline in the number of villages is to be noticed in the last two decades primarily owing to rapid increase in the growth of towns. On the other hand, the number of towns have shown steady increase since independence. In the census year 2001, the number of towns have declined primarily due to clubbing of several non-municipalities with the neighbouring municipal towns thus reducing the number of urban centres.

5.2 Phases of urbanisation in the subdivision

In the post –independence period the urbanization process in the subdivision can be divided into two distinct phases-

5.2.1Period of Rapid Urbanisation (1951-1981)

During this period urban population grew from 22546 to about 384460 registering almost a seventeen fold increase. The percentage of urban population increased from 5.72 to 31.72. Urban concentration during this period grew due to favourable geo-economic factors . Huge influx of migrant population from erstwhile East Pakistan also aided urban growth. During this period no. of towns increased from 2 to 11 while the no. of villages declined from 596 to 555.

5.2.2 Period of Steady Urbanisation (1981-2011)

During this period urban population grew from 384460 to 1524964 registering almost a four fold increase. The percentage of urban population increased from 31.72 to 54.67. The no. of towns increased from 11 to 33 while the no. of villages declined from 555 to 492. Urbanization showed steady growth during this period primarily due to growth of infrastructural facilities in Barasat subdivision owing to the accordance of district headquarter status to Barasat town in 1986. This led to decline in importance of neighbouring Barrackpore subdivision which had a strong urban base since colonial times. Besides, the urban growth in Barrackpore subdivision has almost reached a saturation level which has further aided the urban growth in Barasat subdivision.

5.3 Level of Urbanisation In Barasat Subdivision (1951-2011)

In the earlier part of the analysis, an attempt has been made to identify the nature, degree and tempo of urbanisation in Barasat Subdivision during the post independence period as a whole. However, within the subdivision, there exists wide differences in terms of levels of urbanisation. This part of the study attempts to analyse the spatio-temporal variation in the levels of urbanisation within the subdivision considering the Police Stations (1951-1981) and Community Development Blocks (1991-2011) as the areal units of study.

Different parameters have been selected to measure the level of urbanisation in the study area. The following parameters have been taken into consideration

a) Percentage of Urban Population to Total Urban Population of the Police Station / C.D. block.
b) Percentage of Urban Area to Total Urban Area of the Police Station / C.D. block.
c) Urban Population Density
d) Urban Spacing

a) Percentage of Urban Population to Total Urban Population of the Police Station / C.D. block.- This parameter is considered as one of the most important criteria to measure the level of urbanisation. Percentage of urban population in the police stations and C.D.blocks has been calculated with respect to the urban population of the entire subdivision.

Table 3(a) : PS wise percentage of urban population to total urban population of the subdivision (1951-1981)

Police station	1951	1961	1971	1981
Habra	28.91	55.93	45.26	40.74

Deganga	0	0	0	0
Rajarhat	0	0	13.30	17.59
Barasat	71.09	44.07	41.44	41.67
Amdanga	0	0	0	0

Source- Computed by the authors from District census handbooks, North 24 parganas, Census of India(1951-1981)

The above table clearly indicates that there exists wide variation among the police stations (1951-1981) and C.D. Blocks with respect to percentage of urban population. Urban population can be seen only in the police stations of Habra and Barasat in 1951 and 1961. Barasat in 1951 showed a greater percentage of urban population owing to its closer proximity to the state capital of Kolkata. However ,in 1961 , Habra showed a greater percentage of urban population probably due to influx of migrant population from erstwhile East Pakistan not accounted during the 1951 census. Rajarhat burst into the urban scene with a significant percentage of urban population in 1971, thus reducing the monopoly of Barasat and Habra. This scenario continued in 1981.

Table 3(b): C.D.block wise percentage of urban population to total urban population of the subdivision (1991-2011)

C.D.Blocks	1991	2001	2011
Habra-I	7.30	6.42	6.22
Habra-II	28.53	25.35	19.98
Deganga	5.79	0	0.63
Rajarhat	21.34	27.73	32.99
Barasat-I	25.48	25.02	26.09
Barasat-II	11.56	15.47	13.65
Amdanga	0	0	0.44

Source- Computed by the authors from District census handbooks, North 24 parganas, Census of India(1991-2011)

The situation somewhat changed after 1991 with Rajarhat rapidly increasing its share of urban population during the last three census years. Besides Barasat-I has maintained a steady pace of urbanisation throughout owing to its administrative status as the district headquarter. Due to rapid

surge of Rajarhat other C.D. Blocks have shown gradual decline in percentage share of urban population. Amdanga has recorded a very late entry into the urban scene only in 2011. Deganga has also shown an insignificant growth in urban population. Although it entered the urban scene in 1991, it was declassified in 2001. It again entered the urban process in 2011. Both these C.D. Blocks have a large agricultural hinterland which accounts for a significant rural population leading to a low percentage of urban population.

b) ***Percentage of Urban Area to Total Urban Area of the Police Station / C.D. block.-*** The change in total urban area of a spatial unit over time is also a significant measure of urbanisation.

c) **Table No. 4(a): Percentage of urban area of p.s. to total urban area of the subdivision(1951-1981)**

Police station	1951	1961	1971	1981
Habra	42.11	52.47	39.53	39.20
Deganga	0	0	0	0
Rajarhat	0	0	15.35	14.73
Barasat	57.89	47.53	45.29	46.07
Amdanga	0	0	0	0

Source- Computed by the authors from District census handbooks, North 24 parganas, Census of India(1951-1981).

Table No.: 4(b) –Percentage of urban area of c.d.blocks to total urban area of the subdivision(1991-2011)

C.D.Blocks	1991	2001	2011
Habra-I	10.78	10.12	11.16
Habra-II	29.04	29.06	23.22
Deganga	2.16	0	1.27

Rajarhat	24.23	24.06	24.86
Barasat-I	25.13	22.81	26.70
Barasat-II	8.66	14.00	11.11
Amdanga	0	0	1.69

Source- Computed by the authors from District census handbooks, North 24 parganas, Census of India(1991-2011)

During 1951 and 1961 the total urban area of the subdivision was shared by Habra and Barasat police stations. Barasat enjoyed a greater percentage during 1951 while the situation reversed in 1961. Rajarhat entered the scene in 1971. It shared a significant part of urban area both in 1971 and 1981 thus reducing the percentage share of Habra and Barasat. During the census year 1991, the concept of C.D. Blocks emerged. The percentage share of urban area in Habra-I and Rajarhat has steadily increased in the successive three dacades while that of Habra-II has declined gradually. Barasat-I and Barasat-II have shown fluctuating trend. Deganga has a very insignificant percentage of urban area owing to rural dominance while Amdanga has entered the urban scene as late as 2011.

d) ***Urban Population Density-*** Urban Population Density designates the volume of total urban population per square unit of urban area. It is a good measure of the spatial variation of urban concentration.

Table No. :5(a)-Urban population density of police stations (1951-1981)

Police station		1951	1961	1971	1981
Habra		629	5749	3722	4425

Deganga		0	0	0	0
Rajarhat		0	0	2803	5085
Barasat		1125	5010	2962	3851
Amdanga		0	0	0	0

Source- Computed by the authors from District census handbooks, North 24 parganas, Census of India(1951-1981)

Habra and Barasat had a low density in 1951, but it has steadily increased with a peak reaching in 1961. Rajarhat ,since its emergence on the urban scene, has maintained a high density owing to its close proximity to state capital Kolkata and a boom in the infrastructural sector.

Table No. 5(b): Urban population density of CD blocks (1991-2011)

C.D.Blocks	1991	2001	2011
Habra-I	3679	4190	3927
Habra-II	5341	5762	6057
Deganga	2696	0	3527
Rajarhat	6230	7610	9347
Barasat-I	5426	7245	6882
Barasat-II	7259	7298	8654
Amdanga	0	0	1824

Source- Computed by the authors from District census handbooks, North 24 parganas, Census of India(1991-2011)

After 1981, administrative changes have taken place and analysis have been done taking C.D. Block as an areal unit. Barasat-I and Habra-I block has shown a slightly fluctuating trend while Habra –II has shown a steadily rising trend due to increasing population pressure of Habra and Ashoknagar-Kalyangarh municipality. Rajarhat is the key area where urban population density is very high. The region which started as a satellite town is developing very fast due to paucity of space in nearby Kolkata. Open spaces are being rapidly filled up with massive housing development projects and other

commercial projects. Barasat-II also has high density due to closer proximity to Kolkata. Deganga and Amdanga have lower density due to their stong agrarian base and high rural population.

d) Urban Spacing- Spacing of settlements is largely governed by their size. Large settlements would be closely spaced while smaller settlements would be widely spaced. These spatial patterns are constantly changing in time and space which has resulted in an increase in the size of settlements and reduction in their spacing.

Table 6(a)- Urban spacing of poice stations (1951-1981)

Police station	1951	1961	1971	1981
Habra	0.097	0.098	0.08	0.07
Deganga	0	0	0	0
Rajarhat	0	0	0.089	0.066
Barasat	0.106	0.110	0.085	0.075
Amdanga	0	0	0	0

Source- Computed by the authors from District census handbooks, North 24 parganas, Census of India(1951-1981)

Taking Police stations(1951-1981) and C.D.Blocks (1991-2011) as areal unit , the spacing of urban settlements have been calculated by employing Sarkar's method for the census years(1951-2011). The Inter-settlement spacing is given by the equation:

Inter-Settlement Spacing: $2.\sqrt{(A/n)}$

Where, n shows the number of urban settlements within the Police Stations/C.D. Blocks with an area of 'A'.

During the period (1951-1981), urban spacing has gradually declined over the decades owing to increase in population pressure. Similar trend can be seen in Barasat police station. Rajarhat has also shown progressive decline in urban spacing in the two decades of 1971 and 1981.

Table No. 6(b)- Urban spacing of c.d.blocks (1991-2011)

C.D.Blocks	1991	2001	2011
Habra-I	0.075	0.063	0.062
Habra-II	0.063	0.057	0.053
Deganga	0.089	0	0.066
Rajarhat	0.057	0.048	0.042
Barasat-I	0.060	0.049	0.048
Barasat-II	0.049	0.048	0.043
Amdanga	0	0	0.095

Source- Computed by the authors from District census handbooks, North 24 parganas, Census of India(1991-2011)

During the period (1991-2011), a similar picture is seen in all the C.D.Blocks of the subdivision. As urban population in all the C.D. Blocks is rapidly increasing after 1981, urban spacing has declined in all the blocks. Rajarhat, the fastest growing block in the subdivision , shows the minimum values in urban spacing. It is followed closely by Barasat-II, another fast growing urban area. Urban spacing is also quite low in Barasat-I where the district headquarter is located.

5.4 Spatio-temporal pattern of urbanisation in Barasat subdivision

On the basis of the above selected parameters, the spatio-temporal pattern of urbanisation has been analysed in Barasat subdivision. However this is to be noted that a police-station/C.D.Block does not show same rank in all criteria. A Composite Value of level of urbanisation has been developed on the basis of Summation of Z Score to obtain an overall idea of the combined effect of all the chosen four parameters discussed in the preceding section. The following procedure has been followed in this regard-

a) Mean and standard deviation values of each attribute for the Police Stations (1951-1981) and C.D.Blocks (1991-2011) during each census year have been computed.

b) Since the units of measurement for each criteria is different, in order to make them comparable the values of each criteria have been transformed into a standard form using the standard score (Z score).

c) The Z scores on all the four criteria have been then added together to give a Composite Index (C.I.). Summation of Z scores for some of the areal units have shown negative values. All the negative value of the 'Summation of Z score' has been converted into positive ones by adding '7' with every Zscore of each areal unit.

Table No.-7: Level of Urbanisation during 1951-1981 in Barasat subdivision (p.s.wise)

Police Stations	Composite Z Score For Lu,1951	Police Stations	Composite Z Score for Lu,1961
Barasat	12.67	Habra	11.68
Habra	9.62	Barasat	11.03
Rajarhat	4.23	Rajarhat	4.08
Deganga	4.23	Deganga	4.08
Amdanga	4.23	Amdanga	4.08

Police Stations	Composite Z Score For Lu, 1971	Police Stations	Composite Z Score For Lu, 1981
Habra	10.72	Barasat	10.58
Barasat	10.49	Habra	9.77
Rajarhat	7.87	Rajarhat	8.23
Deganga	2.98	Deganga	2.95
Amdanga	2.98	Amdanga	2.95

Source- Computed by the authors

Table No. 8: Level of Urbanisation during 1991-2011 in Barasat subdivision(c.d. block wise)

C.D. Blocks	Composite Z Score for Lu,1991	C.D. Blocks	Composite Z Score for Lu,2001	C.D. Blocks	Composite Z Score for Lu,2011
Habra-Ii	10.2	Habra-Ii	10.26	Rajarhat	9.9
Barasat-I	9.52	Rajarhat	10.22	Barasat-I	8.96
Rajarhat	9.28	Barasat-I	9.82	Habra-I	8.37
Barasat-Ii	7.19	Barasat-Ii	8.27	Habra-Ii	8.13
Habra-I	6.61	Habra-I	7.2	Barasat-Ii	6.91
Deganga	5.69	Deganga	1.77	Amdanga	5.28
Amdanga	0.69	Amdanga	1.77	Deganga	4.33

Source- Computed by the authors

On the basis of the Composite values the Police Stations and C.D.Blocks have been classified into the categories of high, moderate and low levels of urbanisation.

Table No. 9: Spatial distribution of police stations for level of Urbanisation(1951-1981)

Census Year	Composite Value for Level Of Urbanisation		
	Low (Less Than 5.00)	Moderate (5.00-10.00)	High (More Than 10.00)
1951	Rajarhat, Deganga, Amdanga	Habra	Barasat
1961	Rajarhat, Deganga, Amdanga	-	Habra, Barasat
1971	Deganga, Amdanga	Habra, Rajarhat	Barasat
1981	Deganga, Amdanga	Habra, Rajarhat	Barasat

Source- Categorised on the basis of Table-9

The above table clearly indicates the urban scenario in the subdivision till 1981. Deganga and Amdanga police stations, being entirely rural, have consistently shown poor performance in the

urbanisation process. Rajarhat was also in the similar bracket till 1961. However a sudden spurt in urbanisation process can be seen in the year 1971 in this police station. The reason may be attributed to its proximity to Salt Lake which was being developed as a planned new township to accommodate the urban spill from the already congested Calcutta metropolice. Habra had shown medium level of urbanisation in the beginning . However it started showing rapid rise in urban development in 1961 making it to the high level of urbanisation in 1961 mainly due to the influx and settlement of migrant population due to its close proximity to the Bangladesh border. But the momentum slightly slackened in 1971and 1981and it fell in the medium category along with Rajarhat. Barasat police station, being the headquarters of not only the subdivision, but also the district, has consistently shown high level of urbanisation throughout all the census years.

FIG 4- Level of urbanisation in Barasat subdivision, 1951

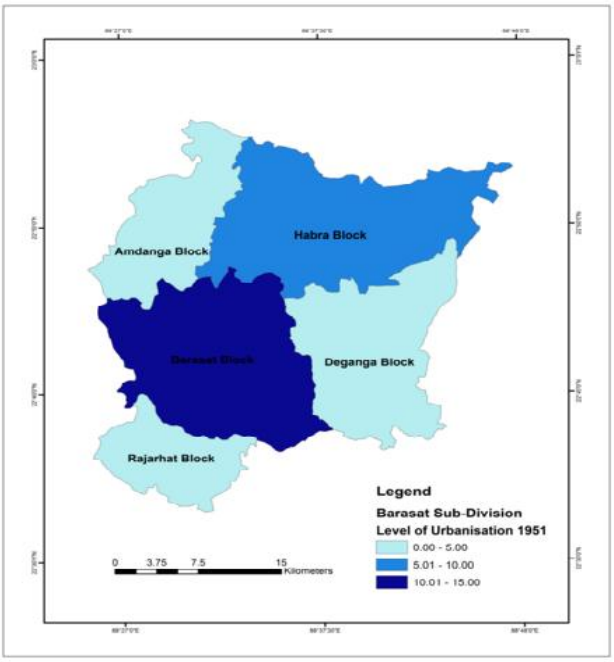


FIG. 5: Level of urbanisation in Barasat subdivision, 1961

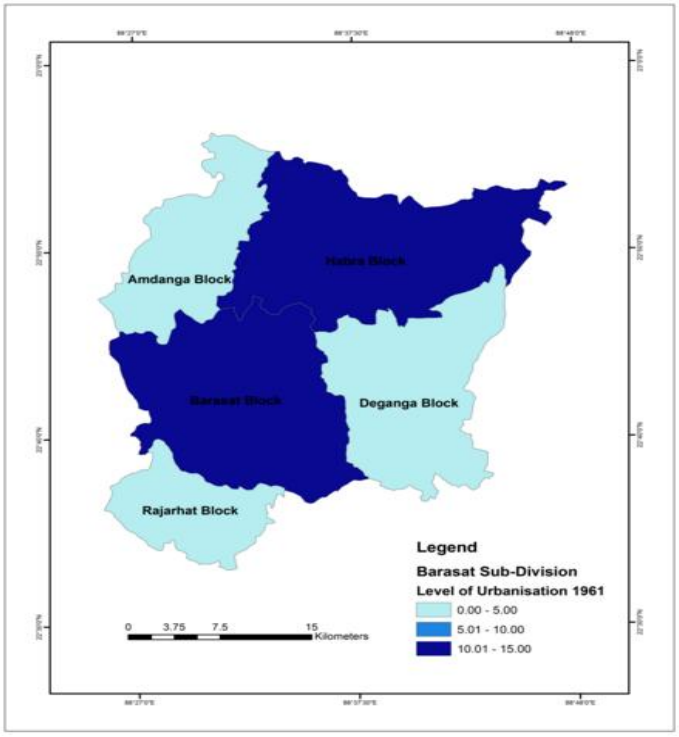


FIG 6: **Level of urbanisation in Barasat subdivision, 1971.**

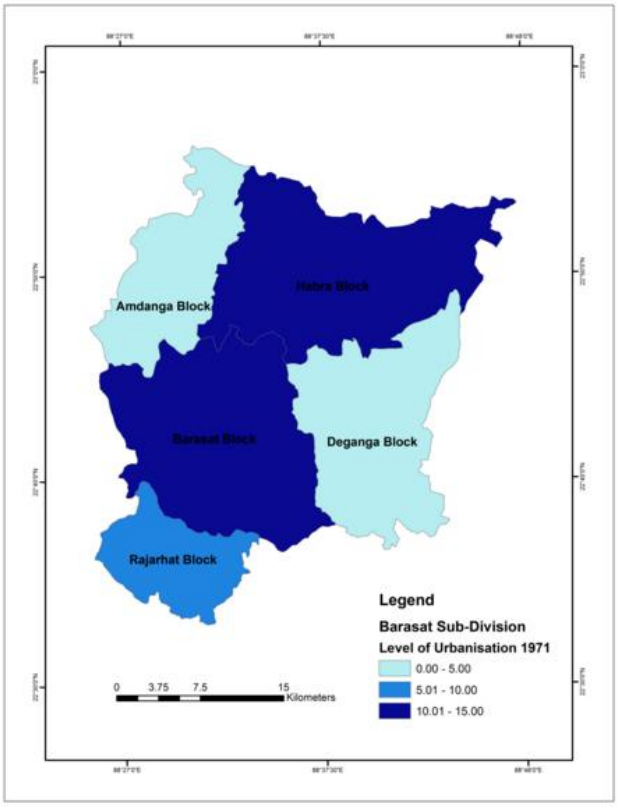


FIG. 7: Level of urbanisation in Barasat subdivision, 1981.

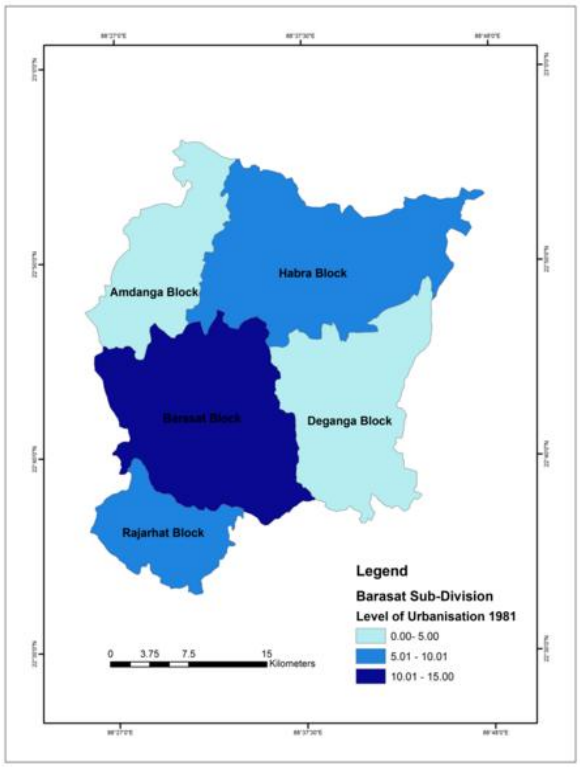
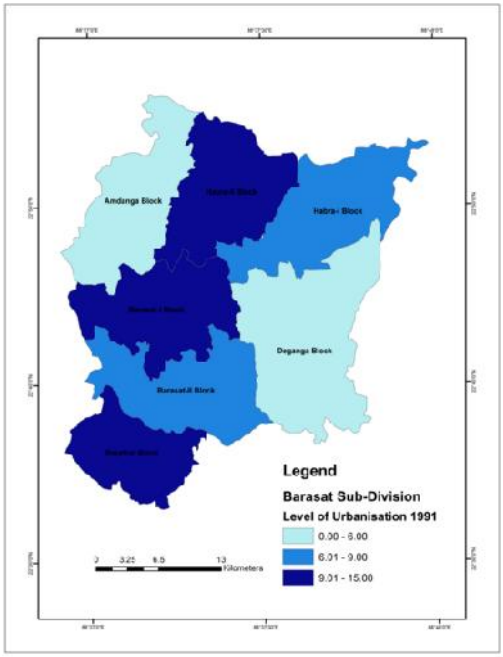


Table No. 10: Spatial distribution of C.D. blocks for level of Urbanisation,1991-2011.

Census Year	Composite Value For Level Of Urbanisation		
	Low(Less Than 6.00)	Moderate(6.00-9.00)	High(More Than9.00)
1991	Deganga, Amdanga	Habra-I, Barasat-II	Habra-II, Barasat-I, Rajarhat
2001	Deganga, Amdanga	Habra-I, Barasat-II	Habra-II, Barasat-I, Rajarhat
2011	Deganga, Amdanga	Habra-I, Habra-II, Barasat-I, Barasat-II	Rajarhat

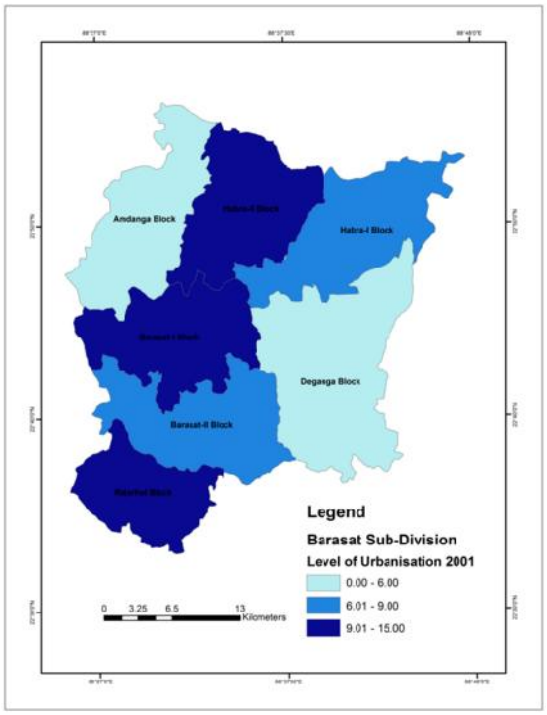
Source- Categorised on the basis of Table-10

FIG. 8: Level of urbanisation in Barasat subdivision, 1991.



The scenario has somewhat changed in the 1990s. The administrative set-up changed in the 1991 census with the concept of C.D blocks being introduced. The subdivision, henceforth, has been subdivided into 7 C.D.blocks. Deganga first entered the urban scene in 1991, but in 2001 it was again declassified and designated into rural category. It again entered into the urban layout in 2011 along with Amdanga. However both these community development blocks have shown low levels of urbanisation due to predominantly rural hinterland and significant agricultural base. Habra-I and Barasat-II have shown moderate levels of urbanisation both in 1991 and 2001.

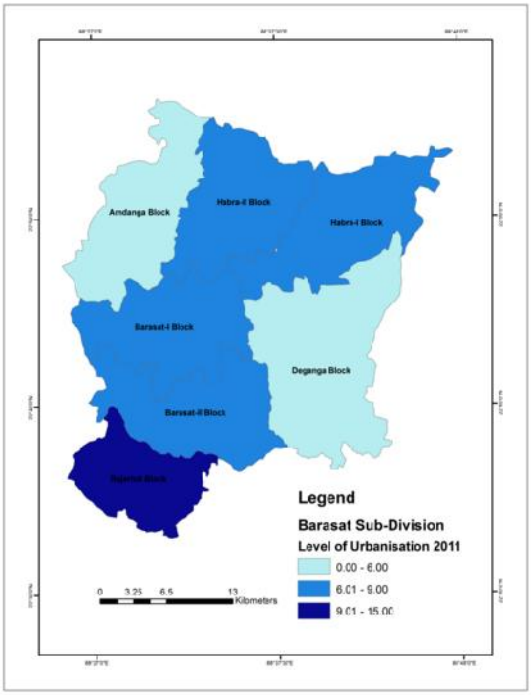
FIG. 9: **Level of urbanisation in Barasat subdivision, 2001.**



366

367 The reason may be attributed to the fact that these areas traditionally had high level of urbanisation
368 and are presently stagnating. Similar situation is seen in Habra-II and Barasat-I in 2011.

369 **FIG 10: Level of urbanisation in Barasat subdivision, 2011.**



370

The most interesting feature of urbanisation in the region has been the overwhelming performance of Rajarhat in the entire period. Despite its late entry into the urban scene it has surged far ahead of all the other C.D.blocks in level of urbanisation owing to its locational advantage of nearness to highly urban Bidhannagar subdivision and the state capital of Kolkata which is fully urban. Besides the real state boom and the Government initiatives to develop the region as satellite town to ease the urban pressure of Kolkata has further aided its growth. Presently many of the IT sector companies and other large commercial companies have their office located in this area. Of late, in 2015, Rajarhat-Gopalpur municipality has been incorporated within the Bidhannagar municipal corporation. There is much scope for urbanisation in Amdanga and Deganga where the level is quite low. This will aid in a more balanced urban development and ease the pressure from other C.D.Blocks.

5.5 CONCLUSION

On the basis of the above study the following conclusions can be made-

(i) A rising trend of urbanisation in the entire subdivision is seen in the post-independence period similar to that being experienced in the entire country and other developing areas across the globe. However the rate is slightly higher in consonance with the district's trend which is higher than that of both the state and national average. However the pace of urbanisation is slower in the subdivision than the district rate mainly due to its strong agricultural hinterland and its adjacent location to the neighbouring highly urbanized Barrackpore subdivision.

(ii) The analysis regarding the level of urbanisation in Barasat subdivision during the period 1951-2011 shows, that there exists wide variation in the level of urbanisation within the region. In fact the level of urbanisation does not conform to any definite pattern. The level is very low, throughout the period in the Deganga C.D. block and Amdanga C.D. block. This region has bright prospets for future urban development if the required infrastructural facilities and incentives are provided.

(iii) The spatio-temporal pattern of urbanisation is quite interesting. Urbanisation is low in the eastern and north western part of the subdivision. The major cause is the prosperous agricultural base of the two blocks, Amdanga and Deganga, which support a large rural population. In fact these two blocks have marked their slow entry into the urban fold as late as 2011. Habra-I, Habra-II, Barasat-I and Barasat-II have medium levels of urbanization during the later period of the study. Although Habra and Barasat had traditionally high urban

population, the urban surge in Rajarhat in the recent times, has somehow slackened the pace in these regions. The most remarkable feature is the high level of urbanisation being experienced in the southern portion of the subdivision in Rajarhat C.D. block. However unrestricted growth of urbanisation in this area may create pressure on existing resources.

As the urbanisation pattern is highly uneven, steps are needed for a more equitable and sustainable urban development particularly in the eastern and north western fringes of the subdivision. The strong agricultural base of these areas can promote agro-based industries with adequate government and private support. This will help in increasing the employment opportunities along with a balanced urban development. It will also help to prevent the exodus of people towards the more established urban centres like Barasat, Habra and Rajarhaat and may help to ease their pressure. The study hopes to promote further research in this field so as to promote a more balanced and sustainable urban growth in the region without jeopardizing the health of environment.

REFERENCES-

Bhattacharjee, D. and Hazra, S.(2018) The role of urban momentum in transformation of North 24 Parganas District, West Bengal, Indian Journal of Regional Science, Special volume. pp106-118

Census of India. (1951) District Census Handbook,24 parganas, West Bengal Series, Directorate of Census Operations, West Bengal

Census of India. (1961) District Census Handbook,24 parganas, West Bengal Series, Directorate of Census Operations, West Bengal

Census of India. (1971) District Census Handbook,24 parganas, West Bengal Series, Directorate of Census Operations, West Bengal

Census of India. (1981) District Census Handbook,24 parganas, West Bengal Series, Directorate of Census Operations, West Bengal

Census of India. (1991), District Census Handbook, North 24 parganas, West Bengal Series, Directorate of Census Operations, West Bengal

Census of India. (2001), District Census Handbook, North 24 parganas, West Bengal Series, Directorate of Census Operations, West Bengal

Census of India. (2011) Provisional Population totals, Paper I of 2011, West Bengal Series 26, Directorate of Census Operations, West Bengal

Hauser, Philip. M. and Duncan O.D.(1954), The study of Population- An inventory and Appraisal, The University of Chicago Press, pg 34

MHUPA (2016) India Habitat III National Report 2016, New Delhi: Ministry of Housing and Urban Poverty Alleviation.

Paul,S. and Chatterjee, K.(2012) Urbanisation and Consistency Measurement: A Study on District of North 24 Parganas, West Bengal, India, Scholars Research Library, Archives of Applied Science Research, pp2052-2066

Potter, P. (1992) Contemporary Issues in Geography, Urbanisation in the Third World, Oxford University Press, pp 5

Sarkar, A.(1991) Evolution of the size and spacing of Urban Settlement in West Bengal; Unpublished Ph.D Thesis pp. 37,42-44

Sarkar ,J.P.(2006) Bangladeshi Migration to West Bengal: A cause of Concern, Centre for the Study Regional Development, JNU, India.

United Nations(2018). Department of Economic and Social Affairs , Revision of World Urbanization prospects, retrieved from http:// www.un.org/development/.../2018-revision-of-world-urbanization-prospects.html

Will, Lauther.(2011): 'The Urban Plan for India: A Foundation for Economic Growth', Global Majority E Journal, 2(2).

World Cities Repor 2016: Urbanization and Development –Emerging Futures, Retrieved from https://unhabitat.org/flagship/world-cities-report,2016