

## Changing Pattern of Population Growth and Present Status of Population Distribution in Asansol; A Geographical Analysis

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### ABSTRACT

Since time immemorial, population growth has its direct effect on environmental degradation via over exploitation of water and natural resources. Population growth has played a key role on the physical as well as socio-economic conditions of any places. Being one of the important Metropolitan cities and second largest cities in West Bengal, it is absolutely essential to know the pattern of population growth and its spatial variation in Asansol. So, the main objective of the present study is to evaluate the temporal variation of population growth and spatial distribution of population densities in Asansol subdivision. From the study it has been evaluated that the total population of this subdivision has been increased throughout the decades from 1901 to 2011 and there are lot of ups and downs in the trend<sup>2</sup> of population growth rate. Among the 7 places, Asansol Municipal Corporation has taken almost the first places both in the spatial variation of population growth rate and population density according to 2011 census data. Being the central point of this subdivision and also being the administrative head, Asansol Municipal Corporation has huge population density as well as high rate of population growth rate among the other place of this subdivision. However, due to the continuous decrease in the population growth rate in the last few decades, it can be assumed that the population growth rate of this subdivision will continue to decline over the next decade.

**Key Words:** Decadal Growth Rate, Population distribution, Population Density

### 1. INTRODUCTION

Since time immemorial, population growth has its direct effect on environmental degradation via over exploitation of water and natural resources (Demographic & Socio-Economic Analysis in Lower Ganga Basin, West Bengal, GRMBP). Population growth has played an important role on the physical as well as socio-economic conditions of any place. Population

growth has its direct effect on the distribution of population and shortage of habitable land on the earth surface. So, it is necessary to identify the growth rate of population as well as the pattern of distribution of population over the area for evaluating the pressure of population on the effective land and production (Paul R, Ehrlich and John P, Holdren, Impact of Population Growth). In recent time throughout the world especially in the developing countries population has been increased in a rapid rate, India as a developing country is not lack behind. In any country population growth rate has considered as a key method to assess the overall development of that country. Being one of the important metropolitan cities of West Bengal, it is absolutely essential to know the temporal variation of population growth rate of Asansol. Since Asansol is West Bengal's second-largest city after Kolkata, it is necessary to highlight the present condition of population growth rate and correct distribution of population of this city. According to a 2010 report released by a UK-based policy research non-governmental body, Asansol was ranked as 11<sup>th</sup> fastest growing cities. So, it's also necessary to verify the causes of rapid increase of population for a city like Asansol. Keeping the above aspects in view, the present study examines the trends of population growth and spatial distribution of population in Asansol Subdivision.

## **2. OBJECTIVES OF THE STUDY**

The present study is based on following major objectives, which are given bellow:

1. To identify the trend of temporal growth of total population and decadal growth rate of population in Asansol subdivision.
2. To represent the spatial variation of population growth rate among different Blocks of Asansol Sub division.
3. To evaluate the present status of spatial distribution of population among different blocks in Asansol.

## **3. DATA BASE AND METHODOLOGY**

The present study is totally based on secondary data collected from District Census Handbook of Bardhaman (2001 & 2011), C.D Block wise Primary Census Abstract Data of Asansol Municipal Corporation and official page of Asansol Municipal Corporation and Paschim Bardhaman district. For the study of present paper, Asansol Sub division or Metropolitan city has been selected as in general and different C.D. Blocks in particular. After that the collected data has been analyzed by using various statistical methods and cartographic techniques. To represent the temporal variation of population growth Simple line graph and bar graph has been used. As well as to represent the variation of population densities among different blocks, ArcGIS software has been used to evaluate. The Block wise population densities has been obtained by dividing the total area of each block from their total population and for obtaining the absolute population

growth, the recent population data has been subtracted from the previous population data. Also, the decadal growth rate of population has been obtained by using following formula:

$$P_g = \frac{P_a - P_b}{P_b} \times 100$$

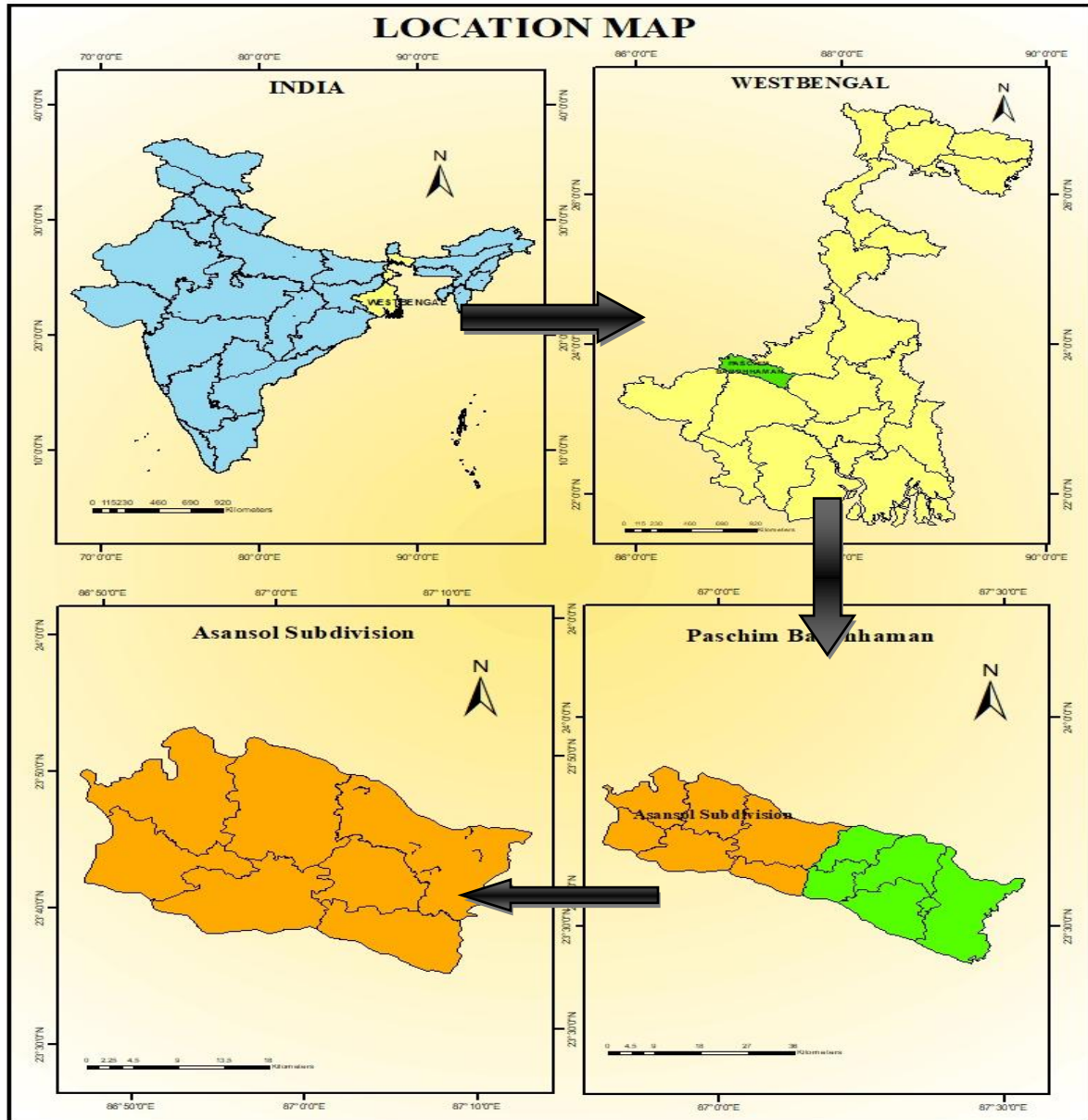
Where,  $P_g$  = Decadal Growth rate of population

$P_a$  = Population of 2011,  $P_b$  = Population of 2001 and 100 is the percentage value.

#### **4. LOACTION OF THE STUDY AREA**

The study area, Asansol is the second largest and second most populated city of West Bengal, located in Paschim Bardhaman district. It is a cosmopolitan city located on the lower Chotonagpur Plateau with the extension of 86°40' East to 87°10' East and 23°40' to 23°56' North between Ajay and Damodar rivers. Mainly Asansol sub division consists of Asansol Municipal Corporation and four Community Development Blocks: Barabani, Jamuria, Raniganj and Salanpur. The four blocks contain 35 Gram Panchayats and 18 census towns. The subdivision has its headquarters at Asansol. While Dhanbad district of Jharkhand lies on the western side, Durgapur subdivision of Paschim Bardhaman district lies on the eastern side. Across the Damodar River Purulia and Bankura district lies in the South, while Dumka and Birbhum districts to the North (Figure-1). According the local history the name Asansol is came from two words – Asan the tree and Sol which means a mineral rich land. The Asan tree is found here in abundance on the banks of the River Damodar. In addition, it is also a land packed with lots of minerals. The City of Asansol is basically a Municipal Corporation which was formed in the year 1994. In 2015 three other Municipalities, namely Raniganj, Jamuria and Kulti were included within the jurisdiction of Asansol Municipal Corporation and thereby forming the greater corporation consisting 106 wards, covering 4 Assembly Constituencies. Asansol is having the majority of Non-agrarian population and this indicates the difficulties in agriculture here. As Asansol is a part of Chotonagpur Plateau the land is uneven.

**Figure No. 1: Location of the Study Area**



## 5. RESULT AND DISCUSSION

### 5.1 TRENDS IN POPULATION GROWTH

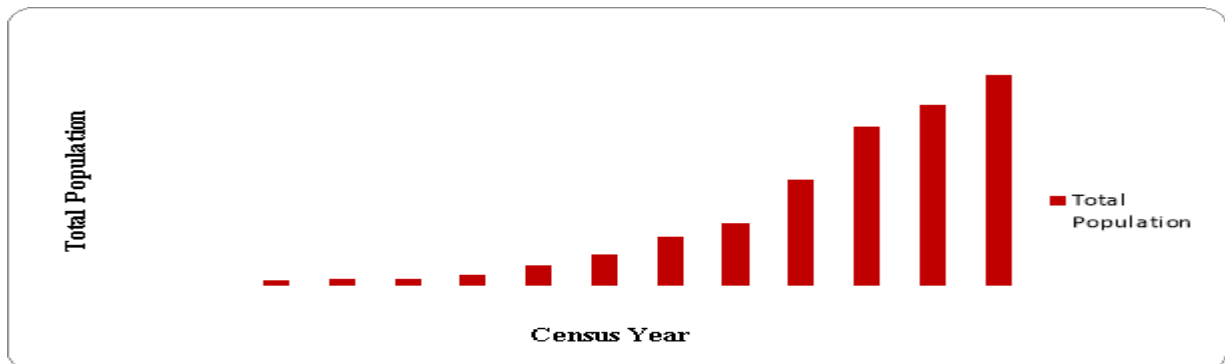
To represent the temporal growth of total population and population growth rate in Asansol metropolitan area, last eleven decades census data that is from 1901 to 2011 has taken into consideration:

**Table no.1: Temporal growth of total population and decadal growth rate of population in Asansol (1901-2011)**

Sl. No	Year	Total Population	Absolute growth of Population	Decadal Growth Rate (%)
1	1901	30747	-	-
2	1911	37416	6669	21.7
3	1921	41035	3619	9.7
4	1931	64973	23938	58.3
5	1941	121508	56535	87
6	1951	182104	60596	49.9
7	1961	286539	104435	57.3
8	1971	370800	84261	29.4
9	1981	628991	258191	69.6
10	1991	938067	309076	49.1
11	2001	1067369	129302	13.8
12	2011	1243414	176045	16.5

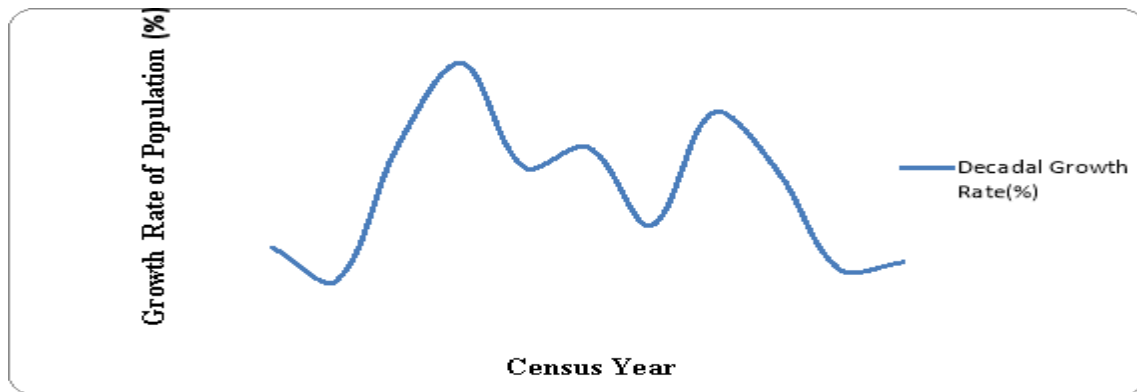
*Source: Census of India*

Population growth is nothing but the change of population of a particular place over a specific period of time. Whereas, decadal growth rate of population is the percentage change (increase or decrease) of total population growth of a particular area in a specific decade. To understand the temporal variation of total population growth and decadal growth rate of population over few decades, mainly the population data from 1901 to 2011 of Asansol subdivision has taken into consideration. From the above data (Table no 1) it has been observed that the total population of Asansol has changed over time and basically the total population of this city has gradually increasing from 1901 to 2011 time period. It is interesting to note that, in 1901 where the total population of Asansol was just 30747, that is in 2011 has been increased in more than 1.2 million.



**Figure 2: Trends in Total Population growth in Asansol from 1901-2011**

Figure-3 shows the temporal variation of decadal growth rate of population in Asansol from 1901 to 2011. From the above data and figure- 3 it is observed that the decadal growth rate of population have varied in different rate, and it is not continuously increasing like the total population growth, i.e. the growth rate was maximum in the year 1941, that was 87%, whereas minimum growth rate has taken place in the year 1921 and 2001, which was 9.7 and 13.8 respectively. From the above diagram it has been observed that, though the total population of Asansol continuously increasing, but the growth rates were not increasing continuously. In 1921 and 1971 the growth rate of population were suddenly decreased, these two years may be considered as demographic dividend. But after 1981, the growth rates of population were slowly decreased, which indicates a positive sight towards population control of this city.



**Figure 3: Trends in Population Growth Rate (%) in Asansol from 1901-2011**

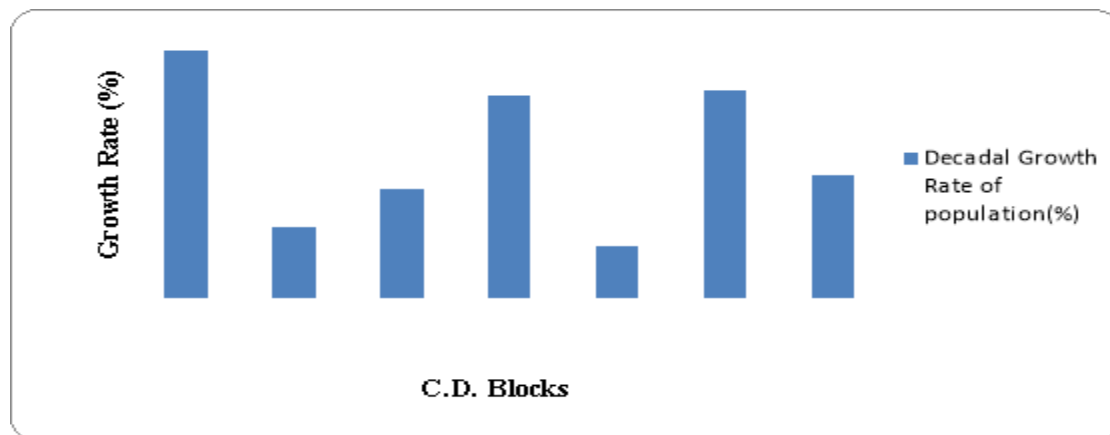
## 5.2. C.D BLOCK WISE SPATIAL VARIATION OF POPULATION GROWTH

**Table No. 2: Block Wise Decadal Growth Rate (2001-2011)**

Sl. No	Name	Total Population (2001)	Total Population (2011)	Growth Rate of population (%)
1	Asansol Municipal Corporation	475439	563917	18.61
2	Raniganj Municipality	122891	129441	5.33
3	Kulti Municipality	290057	313809	8.19
4	Jamuraia Municipality	129456	149220	15.27
5	Salanpur C.D Block	156338	160357	3.85
6	Barabani C.D Block	110361	127542	15.57
7	Jamuraia C.D Block	112799	123176	9.20

*Source: District Census Handbook: Bardhaman , 2001 & 2011*

Spatial pattern of population growth rate is the most significant factor to understand the dynamics of population of any region. Asansol Subdivision had 16.5% of population growth rate during 2001 – 2011, but the spatial distribution of population growth rate in this time period has enormously varied within the subdivision. From Table no. 2 it is observed that, within the subdivision the highest growth rate of population has taken place in Asansol Municipal Corporation, which is 18.61%, whereas lowest population growth rate is observed in Salanpur, that is 3.85%. In rest of the blocks, the population growth rate has varied from each other.



**Figure No. 4: C.D Block wise spatial variation of Population growth in Asansol Subdivision (2011)**

According to the variation of population growth rate (2011) among different C.D. Blocks in Asansol Subdivision, the whole subdivision has been classified into following 3 zones:

**1. Low Growth Rate Zone (3-8%):**

The C.D. Blocks of this subdivision having population growth rate in between 03% to 08% according to 2011 census, are considered as low population growth rate zone. Only 2 places of this Subdivision had population growth rate between 03% - 08%, which are: Salanpur C.D. Block (3.85%) and Raniganj Municipality (5.33%) respectively. Due to comparatively low economic facilities and proper consciousness about population control, in these two places low population growth rate has been recorded in 2011.

**2. Moderate Growth Rate Zone (8-13%):**

The C.D. Blocks of this Subdivision having population growth rate in between 08% to 13% according to 2011 census, are considered as moderate population growth rate zone. Moderate population growth rate had taken place only in 2 places of this Subdivision, which are – Kulti Municipality (8.19%) and Jamuria C.D. Block (9.2%). Presence of some small private industries,

little amount of agricultural activities and influence of coal mining area are the controlling factors for this moderate growth rate in these areas.

### 3. High Growth Rate Zone (>13%):

The areas of this subdivision having population growth rate more than 13% according to 2011 census, are considered as high population growth rate zone. From total 7 places of this subdivision, in 3 places population growth has been recorded very high, these areas are: Asansol Municipal Corporation (18.61%), Barabani C.D. Block (15.57%) and Jamuria Municipality (15.27%). The huge influx of migrant workers from nearest rural areas to these areas in the last few years particularly after 1970s due to the industrial development which created immense job opportunities which in turn attracted lot of immigrants (Basu, Mohana, and Datta, Debajit.), as well as the increase in urban amenities and the increase in the demand for the workers in different industries of these places are the main reasons for such high population growth in these areas.

### 5.3. SPATIAL VARIATION OF POPULATION DENSITY IN ASANSOL SUBDIVISION (2011)

**Table No. 3: C.D. Block Wise Population Density in Asansol Subdivision (2011)**

Sl. No	Name	Total Population(2011)	Area(Sq.Km)	Population Density/Sq.km
1	Asansol Municipal Corporation	563917	125.23	4500
2	Raniganj Municipality	129441	24.99	5200
3	Kulti Municipality	313809	96	3270
4	Jamuria Municipality	149220	79.2	1884
5	Salanpur C.D Block	160357	135.05	1200
6	Barabani C.D Block	127542	156.35	816
7	Jamuria C.D Block	123176	158.1	780

*Source: District Census Handbook: Bardhaman , 2011*

Population density is a vital method to interpret the variation of population distribution of any place. It helps to identify the region with high concentration of population, as well as the region with lowest concentration of population. According to the variation of population density among 7 C.D Blocks (2011), the whole Asansol Subdivision has been divided into 3 population density zones:



### **1. Low Population Density Zone:**

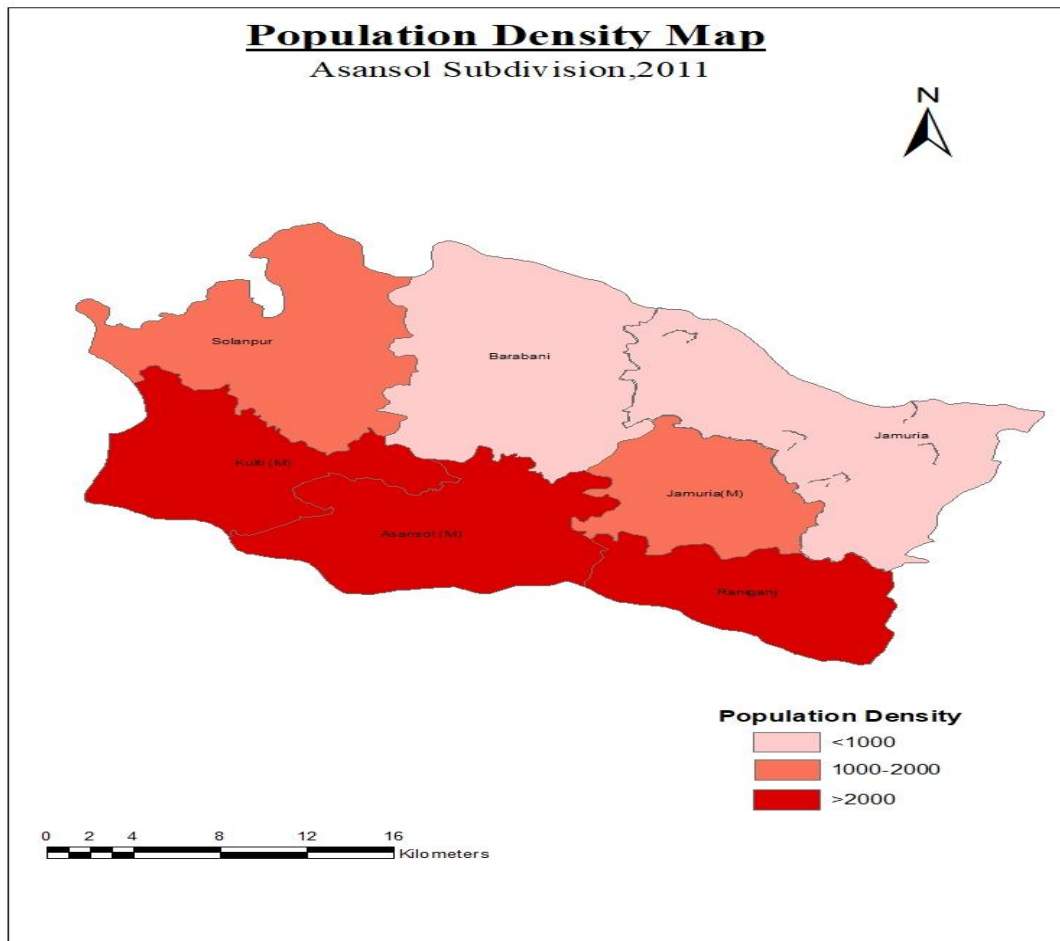
The C.D Blocks which have population density of less than 1000 persons per Square Kilometers are considered as low population density zone. The Table no.3 reveals that, only 2 C.D Blocks of this Subdivision has population density bellow 1000, which are - Barabani C.D. Block (816 persons/sq.km) and Jamuria C.D. Block (780 persons/sq.km) respectively. Due to lack of proper economic prosperity, comparatively low urbanized area, poor quality of life and lack of large industries these areas have very low population density.

### **2. Moderate Population Density Zone:**

The C.D. Blocks which have population density between 1000 to 2000 persons per square kilometers have considered as moderate population density zone. From the above data it has been observed that, only 2 C.D Blocks are fallen under this category, which are – Jamuria Municipality (1884 persons/sq.km) and Salanpur C.D. Block (1200persons/sq.km) respectively. Medium scope of economic prosperity, presence of urbanized area, location of small to medium range of industries, betterment of living and location of ‘Chittaranjan Locomotive Works’ are responsible for the concentration of comparatively moderate population densities in these areas.

### **3. High Population Density Zone:**

The areas which have population density of more than 2000 persons per square kilometers has considered as high population density zone. From the above data and bellow diagram it is observed that, 3 areas of Asansol Subdivision have population density more than 2000 persons per square kilometers and thus fallen under this category, which are – Asansol Municipal Corporation (4500persons/sq.km), Raniganj Municipality (5200 persons/sq.km) and Kulti Municipality (3270 persons/sq.km). Due to better scope of economic prosperity, high standard of living, and presence of lots of industries especially IISCO steel plant and Hindustan Cables, and being a coal based area this zone is very densely populated.



**Figure No.5: Spatial variation of Population Density in Asansol Subdivision (2011)**

## 6. CONCLUSION

From the above discussion, it may be said that there is no similarities between the temporal variation of population growth in Asansol and the spatial distribution of population growth rate within this subdivision; as the population growth rate of the entire region varies with the population growth rate of each block in this region. Again considerable variation in the block wise distribution of population in this region has been found, as the population densities of the urban areas like Asansol Municipal Corporation and its adjoining municipalities are comparatively much higher. Asansol Municipal Corporation being the central area of the entire subdivision, the area is developed in terms of socio-economy, administration, culture, as well as the availability of public services like, banking sectors, hospitals, educational institutions are comparatively exists at a higher rate in this area. Thus the total population, population density as well as the population growth rate of this area is much higher than the

other blocks in this subdivision. So, there is no doubt that Asansol Municipal area is the most influential area than the other 6 areas within this subdivision. However, as the population growth rate of this region has been declining over the past few decades, it is expected that the region's population growth rate will continue to decline over the next decade.

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