Urbanization and Social Change: Analyzing Demographic and Socio-economic Transformations of Asansol Durgapur Planning Area of West Bengal, India

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The physical growth of urban areas as a result of globalization and varied global changes can be termed as urbanization or urban drift which leads to demographic and socio-economic changes among other things. The process of urbanization has a tremendous effect on the demographic structure of a region. Asansol Durgapur Planning Area being a mineral rich zone; mining came up as a prominent economic activity followed by the development of industries mainly heavy industry in this area which paved the way for the evolution of this area as an industrial region. In the recent decades a massive level of urbanization has been witnessed in the Asansol-Durgapur Planning Area which came up under the Asansol-Durgapur Development Authority Area in 1980, under the provisions of WBT & CP Act. Previously, the areas under ADDA was under the district of erstwhile Bardhaman, however, recently the areas under ADDA has been brought under the newly formed district of Paschim Bardhaman. The rate of urbanization between 1991-2001 has been quite rapid mainly due to the inclusion of certain rural areas under urban areas which also led to large scale land use transformation and changes in the social structure. The potentiality of this region in generating employment attracted large number

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of people to migrate here mainly from the rural areas which ultimately led to the establishment of rural-urban linkage. In this paper an attempt has been made to analyze the level of urbanization, demographic pattern and socio-economic characteristics in selected blocks/municipalities under the jurisdiction of ADDA. The various demographic and socio-economic changes that a region undergoes due to urbanization has been dealt with in this paper primarily with the help of secondary data.

[Keywords: Globalization, Heavy industry, Land use transformation, Mining, Rural-urban linkage, Social structure]

1. Introduction

Urbanization is closely linked to modernization, industrialization and is regarded as an index of transformation from traditional rural economies to modern industrial ones. The middle of the 18th century marked the beginning of the rapid rate of acceleration of processes of urbanization of human society (Jennings 2016). Urban places are those having a high total population, high population density and a variety of economic activities to be distinguished from places which have a few people, low population density and very little variety of economic activities. The share of world’s population living in urban centres has increased from 39% in 1980 to 48% in 2000. In 2014 about 54 per cent of the world’s population lived in urban areas which is expected to increase to a staggering 66 per cent by 2050 (United Nations 2014). In particular, the developing countries are witnessing urbanization on a rapid scale in the recent years; not only does they experience growth of population massively but also the absolute size and dimension of the cities as well as that of the conurbations increases (Pike et al., 2016).

In the post-independence era, the process of urbanization accelerated in India in which the adaptation of mixed economic system played a significant role (Radhakrishna and Panda, 2006). According to the Census of India, about 11.4% of the population resided in the urban areas in India in 1901 which increased to 28.53% in 2001 and reached 31.16% as per 2011 census. By 2030, it is expected that about 40.76% of the country’s population will reside in the urban areas (United Nations, 2007). According to the World Bank, India along with China, Indonesia, Nigeria, and the United States, will lead the world’s urban population surge by 2050. This trend of increase of urban population is true for the state of West Bengal as well. According to the 2011 Census of India, there has been marked increase in the proportion of urban population in West Bengal as a considerable section of the population has been increasingly opting for the non-agricultural way of life resulting in rapid urbanization in each of the districts of the state. In fact, for better and effective administration of the ever-increasing population and diversified economic activities, several districts have been bifurcated and currently there are 23 districts in the state (Indian Express, 2017). Since 2001, a sharp rise of the number of ‘census towns’ clearly indicates that people from rural backgrounds are increasingly discarding agriculture as a livelihood option and opting for more
urban alternatives. The number of ‘census towns’ has increased from 255 in 2001 to 780 in 2011 and the number of towns has gone up from 378 in 2001 to 909 in 2011, while the number of villages decreased from 40,782 in 2001 to 40,203 in 2011. The decadal growth of urban population in West Bengal which is 31.89% turns out to be higher than the national average which is 31.16%. In West Bengal, Kolkata is the largest urban agglomeration as per the 2011 census. Asansol and Durgapur turn out to be second and fourth largest urban agglomerations in West Bengal respectively. These two urban agglomerations are part of the Asansol Durgapur Planning Area (ADPA) which falls under the jurisdiction of the Asansol Durgapur Development Authority Area (ADDA). More than 50% of the district’s urban population lies in the ADPA. The presence of coal mining and large industrial establishments are the prime reasons behind the character of ADPA being principally urban in nature. More than 77% of the total population (2.4 million) of ADPA is urban. The entire ADPA comprises of two principle urban areas and eight rural areas, although there is existence of several census towns in the community development blocks (ADDA, 2010).

Much emphasis has been laid on rural-urban migration in order the explain the growth and development of urbanization with the main focus on rural push factors (agricultural modernization and rural-poverty) and urban pull factors (industrialization and urban-biased policies). However, rapid urban growth and urbanization can also be linked with socio-demographic factors like rapid internal urban population growth which may also be treated as a urban push (Trivedi et al, 2008). Hence, in order to study urbanization scenario of a place it is essential to throw light on the demographic factors of the region as well.

However, not much work has been done on the socio-demographic aspect of ADPA, therefore, there is a substantial research gap on the studies of demography in the selected study area, i.e. ADPA. Keeping that in mind, the objectives of this research have been designed as follows:

- Determination of the gradual progress and status of urbanization of the region
- Determination of the demographic characteristics of the area and comparing the demographic changes over the census years.
- Assessing the impact of demographic changes on the urbanization progression
- Analyzing the pattern of transformation of the various demographic determinants in the study area.

2. Methodology

2.1 Delineation of the Study Area

The Asansol-Durgapur Planning Area (ADPA) is a prominent urban centre of eastern India (Figure 1). The region has made immense progress in the recent years
The Asansol-Durgapur region can be broadly divided into two urban areas consisting of Durgapur Municipal Corporation and Asansol Municipal Corporation and around eight Community Development Blocks (City Development Plan, 2006). As an urban agglomeration Asansol has a quite cosmopolitan character. It is located on the lower Chotanagpur Plateau in the Paschim Bardhaman district of West Bengal though only a small part of the plateau lies in West Bengal (Singh, 1971). The other prominent city of the region i.e. Durgapur is an industrial hub and is an urban agglomeration as well.

The Asansol-Durgapur Region is one the major industrial and urban area of West Bengal. Asansol and Durgapur are the two major cities in terms of economic development (Chakravarty, 2014). The economic activity is dominated by mining and wholesale trade. The availability of cost effective power, adequate raw material, cheap labour, power and strong connectivity with Kolkata are the major impetus to economic development. In this region agriculture is limited owing to the low productivity of agricultural land in this region. Moreover, mining comprises a major part of the regional economy primarily oriented around Raniganj-Jamuria coal belt. (City Development Plan, 2006).

Figure-1: Location of the Study Area
The only district in West Bengal to have flourished in both agriculture and industry is erstwhile Bardhaman district (Dutta, 2004). About 42% of the workforce are engaged in non-agricultural pursuits and 58% of the workforce are engaged in agricultural activities (Census of India, 2011).

2.2 Assessing the Process of Urbanization in ADPA

For assessing the process of urbanization in ADPA dependence was laid mainly on secondary data analysis. Secondary data has been collected from the Census of India, District Statistical Handbook, various reports published by the authorities of ADPA. The Land-Use and Land-Cover data has been collected from the satellites LANDSAT 5 and LANDSAT 8 while the sensor used was Operational Land Imager, path and row is 139 and 44 respectively. The dates of acquisition were 23rd December 1996 and 26th May 2017. Image correction techniques were applied for all the images through Erdas Imagine 9.1 software. Nearest neighbour is the resampling technique and there is GCP based accuracy. Maximum likelihood has been used as the supervised classification algorithm. ArcGIS 10.1 based cartographic analyses of census data over the last three decades has been conducted.

2.3 Analyzing the Transformation of the Demographic Attributes in ADPA

Spatio-temporal pattern of transformation of population characteristics, percentage of urban population, employment data and working sector data has been collected from various secondary sources like Census of India, District Statistical Handbook and primary source data includes that collected by running questionnaire have been analyzed and mapped using mapping making software like ArcGIS and cartographic representation of the data has been done using MS Excel 2013.

2.4 Formulation of Management Guidelines

From all the findings we will have an understanding of the status of urbanization in the study area and based on which we will formulate guidelines. Management guidelines have been formulated on the basis of expert opinion. Interviews of the local knowledgeable persons, government officials and staff and NGO members have been done. In consultation of all these stakeholders we have prepared the management curriculum. Guidelines has also been formulated by keeping in mind the existing rules and regulation of the country. The formulation of guidelines will help to accentuate the magnitude of urbanization in the imminent years.

3 Results and Discussion

3.1 Status of Urbanization in ADPA

The gradual progress and status of urbanization in ADPA has been discussed by dividing the gradual evolution of urbanization into the following phases after
critically examining the various major events and trends occurred during the last two centuries.

3.1.1 Pre-Independence Period

The Asansol-Durgapur region wore a deserted look till the 19th century until the initial signs of development began to show up after the opening of the coal mines near Raniganj in 1820. This region became prominent with the availability of these natural resources and subsequently this marked the beginning of economic activities in this region (ADDA, 2010). During the second half of the 19th century the potentiality of development of this region accelerated with the establishment of connectivity in 1855 by the East India Railway and IISCO, the first Iron and Steel Plant started its operation in 1874 (ADDA 2010). Gradually, the coal mines began to show up in the regional scene at Barakar, Sitarampur, Raniganj, Asansol, Andal and Ukhra area that led to the haphazard growth.

In the first quarter of the 19th century the urban industrialization process was initiated with the exploration of mining activities in this region and the Asansol Raniganj Region came up as a prominent mining oriented industrial nucleus (City Development Plan 2006).

3.1.2 Development up to 1978

Andal happens to be the first classified town in the Durgapur Micro Region in the context of urbanization in 1951 whereas Durgapur got the status in 1961 (Census of India, 1951 and 1961). Though the railway service was introduced a long time ago yet, the inclusion of Durgapur in the scenario of industrialization is comparatively a recent phenomenon since this area remained as an almost uninhabited area with a small deserted railway station within a dense network of jungle till the middle of the last century. In and around 1955, Joseph Allen Stein, an eminent American architect planner and former head of Architecture and Planning department of the then most reputed Engineering college of Eastern India, B.E. College Shibpur planned this industrial township along with another American architect Benjamin Polk had designed the layout of modern Durgapur. Around that time the completion of the construction of Durgapur Barrage by the DVC further provided impetus to the development of this area and within a span of 15-20 years this area witnessed tremendous growth and marked the beginning of production in the industries. Notable among them being the DSP, ASP, HFC, Graphite India, Philips, Carbon, Bharat Ophthalmic Glass and Durgapur Cement were of national importance. The Government of West Bengal had set up the Asansol Planning Organization (APO) under the Directorate of Town and Country Planning at Asansol and thereafter established the Durgapur Development Authority (DDA) at Durgapur in the year 1964.

3.1.3 Development from 1978 to 2011

In 1980 under the provisions of the West Bengal Town and Country (Planning and Development) Act 1979 (WBT&CP Act) by merging the erstwhile Asansol...
Planning Organization with the Durgapur Development Authority, the Asansol Durgapur Development Authority was set up in 1980. The Asansol Durgapur Planning Area comes under this authority excluding the Budbud Police Station and covers an area of about 1600 sq.km. Since the inception of the ADDA, certain planning activities as well as developmental activities has been carried out but sadly these were largely confined within the urban areas of Asansol and Durgapur. In the late eighties an Outline Development Plan (ODP) was prepared in compliance with the statutory directives of the WBT&CP Act (1979) for the then Durgapur Notified Area now known as the Durgapur Municipal Corporation which was formed in October 1996 (City Development Plan 2006). The Census of 1991 delineated the Asansol Urban Agglomeration which has finally been transformed into the Asansol Municipal Corporation and its erstwhile municipal limit has been increased more than 5 times. On 3rd June 2015, the municipal areas of Kulti, Raniganj and Jamuria were included within the jurisdiction of Asansol Municipal Corporation (Kolkata Gazette). The urban growth of Asansol-Kulti-Jamuria continues still now on the eastern bank of the river Barakar and northern bank of the river Damodar along the Grand Trunk Road (NH2) and the Durgapur-Dhanbad railway linkage (Eastern Railway). There has been substantial stress on the available infrastructure due to the immense growth in urban population and scaling up of activities. Further development of a region is directly related to the ability of that region to develop urban infrastructure.

3.1.4 Trend of Development 2011 onwards

In April 7th 2017 Bardhaman district was bifurcated into two parts: Paschim Bardhaman District and Purba Bardhaman District and the study area came under the newly formed district of Paschim Bardhaman (The Times of India, 2017). It is a predominantly an urban mining-industrial district in West Bengal with Asansol being the district headquarter. Asansol is the district headquarter comprising of 16 police stations, 8 development blocks, 2 municipal corporations, 62 Gram Panchayats in this district. Each subdivision contains Community Development Blocks which are further divided into rural areas and census towns. There are 66 urban units: 2 municipal corporations, 3 municipalities which have subsequently been absorbed in Asansol Municipal Corporation and 65 census towns.

A Domestic Airport named Kazi Nazrul Islam Airport came up in Andal on 10th May, 2015. The airport mainly serves the cities of Asansol and Durgapur and is about 15 km away from Durgapur’s City Centre and 25 km from Asansol City’s Bus terminus. In South Bengal the towns of Bardhaman, Bankura, Bishnupur, Puruliya, Sainthia, Suri, Bolpur, Rampurhat and Dhanbad and Bokaro in Jharkhand are the hinterland of the airport. This airport is a part of India’s first private sector aerotropolis which has been developed by Bengal Aerotropolis Projects Limited (BAPL). The region is well connected by a network of roadways.
and railways with the NH2 being the most prominent one and south-eastern railways providing good railway communication.

3-2 Status of the Demographic Attributes in ADPA and their Transformations

The presence of coal mines and large industrial establishments attributes to the urban character of the Asansol Durgapur Planning Area. More than 77% of its total population is urban comprising about 2.4 million. According to the 2011 census, about 88% of the erstwhile Bardhaman district’s urban population resides in the ADPA. The decadal growth rate of ADPA during 1991-2001 has been 39% which is much higher than the growth rates of the District and the State.

There has been phenomenal increase of population in the centres of ADPA. However, it is a noticeable fact that the massive growth of population occurred in the decade between 1991-2001; this decade witnessed a very high degree of growth rate in all these centres specially in Kulti Municipality the growth rate has been enormous. In the decade between 2001-2011, the trend of the population growth has been moderate but compared to the previous decade it is seen that the growth pattern is quite on the lower side. A remarkable fact is Jamuria did not have a single urban population in the 1991 Census but in the 2001 census its population increased to quite a certain extent (Figure-2). Migration is one the main factors for the tremendous increase of population in this region.

![Figure-2: Distribution of Total Population over three Census Years](image)


There has been huge influx of migrants in these regions particularly after 1970s due to the industrial flourishment which created immense job opportunities which in turn attracted lot of immigrants.

The growth rate of population of the area represents quite erratic pattern of population increase in the decade of 1991-2001 among all the centres of ADPA. However, in the decade of 2001-11 the rate of population has been quite steady for
all the centres. A noticeable fact is Raniganj C.D. Block had witnessed a negative growth of population in the decades between 1991-2001. This might because of the growth of population Raniganj Municipality/development of Raniganj as a municipality. Jamuria also recorded negative growth of population in the decade of 1991-2001. However, in almost all the centres the growth rate of population in 1991-2001 has been greater than 2001-2011. Asansol Municipality witnessed a tremendous increase in population growth in the years between 1991-2001 although the highest growth rate has been observed in Kulti which quite remarkably high in the decade spanning between 1991-2001.

Migrants mainly came here in search of jobs. Gradually post 2001 the rate of growth of population subsided mainly due to the industrial boom and lessening of employment opportunities in this area. However, the growth of real estate business and coming up of certain tertiary sector activities mainly the informal sector has contributed to the growth of population in this region even after the slowdown of the industrial sector (Chatterjee, 2016). These centres suffer from a lot of congestion because of the quite high population densities prevailing over here. Compared to the population of densities of India and West Bengal the density of population in these areas are very high.

The density of population exhibited by the centres under ADPA also shows a massive concentration of population in these areas particularly in Asansol, Durgapur and Raniganj Municipality (Figure-3). These areas have population densities which are quite higher than the national average. However, it can be seen that in Raniganj C. D. Block the density of population was higher in 1991 and then it gradually reduced in 2001 and made a rise in the year 2011. The increase in the job opportunities can be attributed to this fact of phenomenal concentration of population in these areas.

Figure-3 : Density of Population over three Census Years, Data Source: Census of India 1991, 2001, 2011
The rapid industrialization led to the concentration of population in the ADPA region and most of these areas are occupied by the industrial workers who have settled here for their employment purposes (City Development Plan, 2006). The potentiality of these regions to emerge as prominent growth centres in Eastern India is quite remarkable. However, this immense population pressure creates obstacles in the growth potentiality of this region which is experiencing industrial slump these days, Hence, the ever-growing population need to be controlled immediately in order to fasten the progress of this region.

The gradual progress of population growth over three census years in the ADPA region shows that only in the census year 1991 the total rural population was higher than the total urban population (Bose, 2011).

However, in the consequent census years the urban population has increased remarkably and has been higher than the rural population (Figure-4). The significant increase of urban population indicates the gradual development and emergence of the region as a significant industrial centre which has led to the progradation of urban population and subsequent urbanization.
Literacy plays an important role in the development of any region. It can be seen that in this region literacy percentage is quite high and in almost in most of the centres the literacy is higher than the national average specially in Durgapur MC and Asansol MC (Figure-6). However, in the rural areas of ADPA like Barabari, Jamuria the literacy is not quite satisfactory. But it can be noted that the average literacy rate in all the centres is quite appreciable.

![Figure-6: A Comparison of the Literacy Rates of ADPA, Erstwhile Bardhhaman district, West Bengal and India, Data Source: Census of India, 2011](image)

The trends of the male female population share in this region shows almost equal share of male and female in the total population (Figure-5). However, it can be noticed that the sex ratio is lower than the national average in some centres of the ADPA.

![Figure-7: Distribution of Households According to Household Type (in %), Data Source: Socio-economic survey report of Asansol Subdivision, 2010](image)

The significant proportion of the nuclear families indicates the fact that the gradual creeping in of the traits of urbanization are visible in the study area(Figure-7). This is mainly due to the in migration of the workers in this region who have settled down here with their immediate families and also the ill effect of urbanization that promotes the establishment of nuclear families.

It is seen that the share of working population in 2011 in the tertiary sector has increased progressively while the share in agriculture is on a decline which implies
that the region has steadily progressed towards urbanization (Census of India, 2011).

The distribution of the households according to their causes for settling in some of the selected parts of the study area indicates that employment generation played a major role in attracting the people into some parts of the region; those being in close proximity of the mining areas. Particularly in Asansol it is observed that most of the people have migrated there due to employment purposes.

3.3 Urbanization and Demographic Transformation

It is observed that over a span of two decades the demographic characteristics of ADPA has underwent a massive change. The proportion of the urban population has increased at a greater extent while the rural population have decreased over the years. It seems that the employment opportunities generated by the industries of this mining region have acted as a pull factor of migration. In most of the places an observable fact is that migration has taken place due to job opportunities provided by the region. However, this has led to growth of settlement to a greater extent as can be seen in the Landsat images of Durgapur Municipal Corporation and Asansol Municipal Corporation given below. A remarkable fact is that Asansol and Durgapur have emerged as major urban agglomerations in West Bengal. Asansol ranks second in West Bengal preceded by Kolkata in terms of urbanization.

![Figure-8: Land use and Landcover Map of Asansol, 1998](image)

![Figure-9: Land Use and Land cover Map of Asansol, 2017](image)
It is evident that over a span of only 20 years, the proportion of settlement in Asansol has increased tremendously. Figure-8 shows that in 1998 the proportion of vegetation in Asansol was quite high; however, figure-9 prominently shows the significant increase in built up areas in Asansol in the year 2017.

Figure-10: Land-Use and Land Cover Map of Durgapur, 1996

Figure-11: Land-Use and Land Cover Map of Durgapur, 2017
In case of Durgapur also a large-scale urbanization of population has taken place mainly due to the in migration of the people as a result of the pull factor of migration offered by the industries that came up in area. It is evident from figure 11 that the proportion of built up area have increased in a massive scale in 2017 compared to 1996 (Figure-10).

3.4 Broad Guidelines towards Sustainable Management of ADPA

The process of urbanization in most of the parts of ADPA are still at a nascent period with exceptions of Asansol and Durgapur. Keeping in mind the present scenario the following few guidelines may be followed for sustainable management of the progress of urbanization in ADPA:

» A stringent as well as regular implementation of the existing legislative provisions with respect to urban planning and management in India should be done.

» Alternative roadway system encompassing by passes avoiding the city area, railway over bridges, underpasses and flyovers may be developed to mitigate the problem of excessive traffic congestion.

» Provision of four/six lane ring roads should be made around the major cities of ADDA on an intermediate basis.

» Terminals for large trucks and road transport carriers should be constructed outside the city areas. Movement of these vehicles within the core city should be banned specifically between 6 am - 10 pm.

» Provisions for construction of multi storey bus terminals should be made which will be beneficial for the solving the space crunch issue in the city core areas.

» Vertical growth of the city must be encouraged so that the problem of lack of space for settlement can be dealt with properly and also cutting of greeneries for urban development can be controlled.

» Introduction of metered cab will ensure a proper and swift transportation system.

» Sewerage treatment plant and Storm Water Management should be introduced which will help in keeping the urban area clean.

» Proper maintenance of green space requires to be done in order to maintain the quality of environment of the region.

» Housing projects should be done keeping in mind the provision of housing for LIGs, MIGs and HIGs as well.

» With the increase in vertical height the quality and the level of the groundwater must be maintained properly and strictly.

» A proper land-use planning has to be developed for a planned urban development.
4. Conclusions

It is observed that within a span of about 20 years there has been rapid growth of urban population in ADPA and in almost all the blocks and municipal corporations coming under ADDA the proportion of workers engaged in non-agricultural activities is on the higher side (ADDA, 2010). Between 1991 to 2011 the population densities in the areas under ADDA has made a massive increase which points to the fact that industrialization and increasing job opportunities have attracted the people in those areas as they lie in close proximity of the mining centers. It is also observed that in ADPA most of the migration has taken place due to increased employment opportunities. Over the last three decades the proportion of increase of urban population is very high compared to that of rural population. The increase of informal sector manufacturing, tertiary activities and development of real estate business has been observed which indicates that the population of the region will continue to grow as these activities attract people to settle here (Chatterjee, 2016). The increase in urban population has resulted in the creation of a new district Paschim Bardhhaman with Asansol as the district headquarter. However, the present study has suffered from certain limitations as most the data has been collected from secondary sources and very few persons have been consulted. This also suffers from lack of uniqueness and field survey which would otherwise have proved to be more beneficial for providing a better grip to the direction of the study.

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