



punjab geographer



A DOUBLE BLIND PEER REVIEWED JOURNAL OF APG AND ISPER INDIA INDEXED IN SCOPUS

VOLUME 17

ISSN- 0973-3485

OCTOBER 2021



TREND OF URBANIZATION AND EMERGING REGIONAL VARIATIONS IN URBAN DEVELOPMENT IN ASSAM

Sriparna Das
Bimal Kumar Kar

Abstract

Urbanization involves socio-economic transformation of people and society from traditional agrarian to modern non-agricultural one. On the other hand, urban development refers to progress in infrastructure facilities for quality living along with socio-economic upliftment of the people living in the urban areas. In fact, the processes of urbanization and urban development in an area generally take place almost simultaneously at varying rates. Globally, the phenomenon of urbanization has been undergoing rapid changes in recent times and the state of Assam is not an exception. However, the state of Assam has witnessed a quite low level of urbanization (14.10 per cent as per 2011 Census) as compared to the national average (31.20 per cent). The growth rate of urban population, which depends on the resource base, resource mobilization and socio-economic transformation of an urban area, has been found to be almost the same in both the state of Assam (2.89 per cent) and India (2.79 per cent) during 1991-2011. The pattern of urbanization in the state is spatially varied and regionally imbalanced.

Keywords: Urbanization, Size-class, Urbanization level, Urban development, Infrastructure.

Introduction

Urbanization and urban development are the two inter-related facets that signify the character of an urban system. There is, however, a slight difference between these two terms. Urbanization generally refers to an increase of population concentration in urban areas, and it involves the movement of people from dispersed rural areas to compact urban areas. Such a phenomenon of urbanization brings about marked changes in demographic, ethnic, socio-economic and environmental characteristics of the urban areas (Boterman et al., 2017). Urbanization is a very dynamic process, where demographic factors play a key role towards high pace of social and economic

development. Globally, the phenomenon of urbanization has accelerated in recent times. The proportion of urban population, which has been 13 per cent in the world in 1900, increased to more than 55 per cent in 2018, and it is expected to reach 68 per cent by 2050 (UN-DESA, 2019). However, the size of growth of population in the urban areas over a period of time is not same between the developed and developing countries (Bhagat and Mohanty, 2009; UN-DESA, 2019). It has been observed that the urban population growth has been quite rapid in the recent decades in most of the developing countries (Brockerhoff, 1999). It is expected that most of the population growth will be concentrated in cities of the less

developed region, particularly Asia (Sharma, 2011). Rapid growth of urban population is undoubtedly one of the key processes affecting the development of Asia in the 21st century (Kundu, 2011). However, its dimensions, characteristics and significance vary from one country to another. India has been considered to be a major contributor to this urban explosion after China, due to its large demographic weight and the dynamics of urbanization (Mohan and Dasgupta, 2005; Kundu, 2011). The increase in the number of ten-million plus cities from zero in 1950 to three by the turn of the century is evidence of 'unprecedented urban growth' in India (Kundu, 2011). Similarly, there have been only 5 million-plus cities sharing 18.81 per cent of total urban population in India in 1951, the number increased to 23 in 1991, and 53 in 2011 sharing 32.54 per cent and 42.62 per cent of total urban population respectively (Shaban et al., 2020). Thus, urban population in India is not growing only in number but also concentrating in bigger urban settlements. India is going to reach the landmark of half a billion urban population at the ensuing 2021 Census of India (Krishan, 2018). All these developments in urbanization at international level in general and in India in particular are indicative of the growing significance of urban studies for a balanced and sustainable development planning.

The term 'Urban Development' means the improvement of urban areas and their people with respect to modern facilities and socio-economic conditions. It basically refers to increase in infrastructure facilities in urban areas. It largely involves the growth of amenities, such as educational and administrative institutions, industries and factories, housing and settlements, transport and communication, health care systems, market-

ing system, water supply system, along with improvement in overall quality of life of the urban dwellers in response to the process of urbanization (McGill, 1998; UNHSP, 2016; Singh, 2017). In the course of time these facilities get further developed due to growing requirements of the people inhabiting the urban space. India, being the second largest country in the world in terms of urban population and characterized by diverse physical landscape, also presents a significant regional difference in socio-economic development (Raj et al., 2019). As such, the ongoing process of urbanization combined with social transformation has brought about improvement in the social condition of the people in the country (Sultana and Aktar, 2016).

Urbanization and urban development, however, are not identical between developed and developing countries. In developed countries, industrialization gears up the process of urbanization and urban development. But in developing countries like India, a massive scale of rural to urban migration, the urban agglomeration of large settlements, etc. enhance the process of urbanization (Chetry and Kar, 2014). The push factors are stronger as compared to the pull factors in the case of rural-urban migration in India. Consequently, the large urban areas experience rapid population growth without the provision of basic amenities. A large number of small urban areas which have been previously known as villages increase their population and transform into small towns without fulfilling basic amenities of urban areas. As a result, people live in urban areas without having basic facilities and their decent living standards are compromised. They often become the centers of stagnation and lack necessary civic infrastructure and amenities (Shaban et al., 2020). This is also

true in the case of metropolitan cities, where population move to fringe areas or better environments from the compact core areas for a comfortable living in recent times (Kundu et al. 2002; Kusumantoro et al., 2009). Although the trend of urbanization in Assam has been quite slow, yet the overall scenario of urban development is not much different from the rest of India. With this background an attempt is made in this study to assess the spatio-temporal patterns of levels of urbanization and urban development as emerged from the process of urbanization in Assam.

Objectives

Major objectives of the study are:

- to analyze the trends of urbanization and the spatial patterns of levels of urbanization in Assam;
- to examine the changing nature of urbanization with respect to size-class, rank-size relationship and urban primacy in the state and
- to find out the patterns of spatial variation in level of urban development in the state.

Study Area

The state of Assam, located in the north-eastern part of India, lies between 25° 43' 27" to 26° 32' 15" north latitudes and 90° 56' 50" to 91° 53' 33" east longitudes (Fig.1). The state has a total geographical area of 78, 438 km² accounting for 2.39 per cent of the country's total area. Similarly, with population of 31.2 million the state accounts for 2.58 per cent of the country's total population. From geographical perspective, the state of Assam has been divided into three regions: (i) Brahmaputra Valley Region, (ii) Barak Valley Region and (iii) Hill Region. The Brahmaputra Valley

Region can further be divided into three regions from east to west following the course of the river Brahmaputra, viz. Upper Brahmaputra Valley Region, Middle Brahmaputra Valley Region and Lower Brahmaputra Valley Region. The entire state is drained by dense networks of two major river systems, viz. the Brahmaputra system and the Barak system. Climatically, Assam is characterized by tropical monsoon climate with average summer temperature of 35°C and winter temperature of 8°C. From demographic perspective, density of population in the state is 397 persons per km². The state's population has experienced decadal growth rate of 17.10 per cent during 2001-2011. On account of level of urbanization, 14.10 per cent of total population in the state lives in the urban areas in comparison to the national average of 31.20 per cent. Due to very slow pace of industrialization and urbanization, the state's economy is still largely dependent on agriculture.

Database and Methodology

The present study is primarily based on data collected from Census of India for the period 1901-2011 in general and 1991-2011 in particular. The data pertaining to birth rate and death rate to compute components of urban population growth have been obtained from Sample Registration System Bulletin of Census of India for the years 1999, 2001, 2011, 2012 and Basic Statistics of North-Eastern Region published by North-Eastern Council, Shillong for the years 1980, 2000, 2002 and 2012. The data for the size-class distribution of urban centres, rank-size relationship analysis and primacy of urban system have been collected from Census of India for the period 1971-2011.

The spatio-temporal patterns of

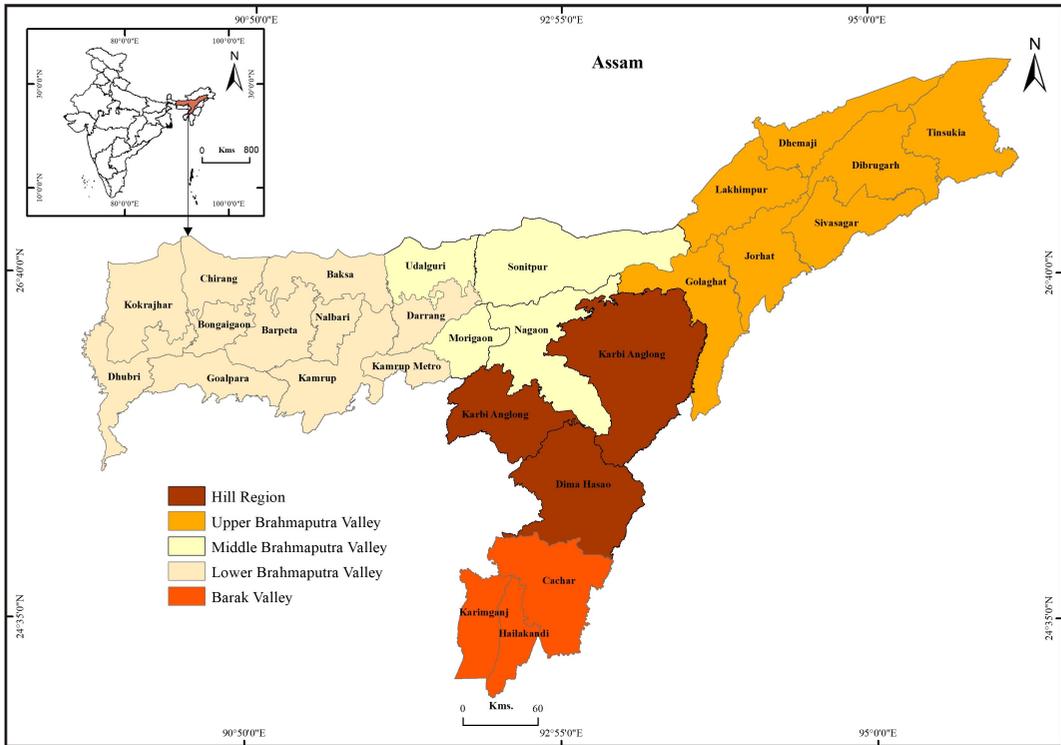


Fig. 1

urbanization have been analyzed in respect of level of urbanization, growth rate of urban population and components of urban population growth. To show the degree of spatial inequality in urban population distribution, Lorenz curve and Gini's coefficient, size-class distribution of urban centres, rank-size relationship of urban centres and urban primacy index have been calculated.

Annual growth rate of population has been calculated by using the following formula:

$$\text{Annual Growth Rate} = \left[\left(\frac{P_1}{P_2} \right)^{1/t} - 1 \right] \times 100$$

Whereas, Gini's Co-efficient has been worked out by using the following formula:

$$G = \frac{1}{100 \times 100} \left| \left(\sum X_i Y_{i+1} - \sum X_{i+1} Y_i \right) \right|$$

where, G is the Gini Co-efficient, X_i is the cumulative proportion of population; Y_i is the cumulative proportion of urban population.

Rank-size rule has been computed with the help of under mentioned formula:

$$P_r = KR^{-b}$$

where, P_r is the population of the town whose rank is R . K and b are the constants.

For calculation of Primacy index, the following formula has been used:

$$\text{Primacy Index} = P_1/P_2$$

where, P_1 and P_2 are the populations of the first and second largest urban settlements, respectively.

The levels of urban development both at district and regional levels have been computed through composite z-score using ten indicators, i.e., level of urbanization (x_1),

urban literacy rate (x_2), proportion of urban non-agricultural workers (x_3), proportion of urban literates with educational level of graduation and above (x_4), proportion of urban population in 0-6 age group (x_5), proportion of urban households having electricity (x_6), proportion of urban households having LPG as fuel for cooking (x_7), proportion of urban households having water supply (x_8), proportion of urban households having sanitation facility (x_9) and proportion of urban permanent households (x_{10}). While selecting indicators their impact with respect to urban development (positive or negative) has also been taken into consideration so that they are all compatible to one another. Data taken up for the indicators are about the urban population of the district. The composite z-score has been calculated with the following formula:

$$CI_j = \sum (X_{ij} - \bar{X}_i) / \sigma_i$$

where, CI_j is the composite z-score of the j^{th} urban population of the districts, X_{ij} is the value for i^{th} indicator of j^{th} urban population of the districts, \bar{X}_i is the mean value for i^{th} indicator and σ_i is the standard deviation value of the i^{th} indicator. Accordingly, the higher value of composite z-score indicates higher level of urban development and vice-versa.

Results and Discussion

Trends of Urbanization

The state of Assam which constitutes 2.58 per cent of the country's population has experienced a very slow growth of urban population during 1901-2011. It is, however, striking to note that urban population in the state has increased from 77 thousand in 1901 to 4.4 million in 2011 by recording an increase of 57 times as against the country's corresponding increase of 15 times. Consequently, the level of

urbanization (proportion of urban population to total population) has increased from 2.34 per cent to 14.10 per cent during 1901-2011 as against the corresponding national averages of 10.84 per cent to 31.20 per cent (Table 1). During the pre-independence period (1901-1941) the proportion of urban population in both Assam and India witnessed a marginal increase, and it gained momentum during the post-independence period due to somewhat rapid industrialization and increased rural-urban migration. However, the rising gap in the level of urbanization between the state and the country from 8.50 per cent to 17.10 per cent during 1901-2011 is indicative of very slow and poor urban development in the state of Assam. It means that India is more than two times more urbanized than Assam.

Among the five geographical regions of Assam, the share of urban population to the state's total urban population is found to be the highest in the Lower Brahmaputra Valley, followed by Upper Brahmaputra Valley, Middle Brahmaputra Valley, Barak Valley and Hill region both in 1991 and 2011. It is, however, worth mentioning that all the regions except the Barak Valley Region have witnessed slight decline in the percentage share of urban population during 1991-2011 (Table 2). On the other hand, the picture is somewhat different in the case of percentage of urban population. The Lower Brahmaputra Valley has recorded the highest level of urbanization, followed by the Hill region, while the Middle Brahmaputra Valley has witnessed the lowest percentage of urban population both in 1991 and 2011 (Table 2). However, there has not been a single geographical region where the proportion of urban population has been greater than the national average (31.27 per cent). Leaving aside Barak valley, the growth of urban

Table 1

Assam: Urban Population, Percentage of Urban Population and Growth Rate of Urban Population

Year	Urban Population	Urban Population (per cent)		Annual Growth Rate of Urban Population (per cent)	
		India	Assam	India	Assam
1901	77,074	10.84	2.34	-	-
1911	92,916	10.29	2.41	0.03	1.89
1921	1,27,107	11.18	2.74	0.80	3.18
1931	1,62,166	11.99	2.91	1.76	2.47
1941	2,08,067	13.86	2.42	2.81	2.52
1951	3,44,831	17.29	2.59	3.53	5.18
1961	7,81,288	17.97	7.20	2.37	8.52
1971	12,89,222	19.91	8.81	3.29	5.14
1981	17,82,376	23.34	9.87	3.88	3.29
1991	24,87,795	25.70	11.09	3.16	3.39
2001	34,39,240	27.29	12.90	2.77	3.29
2011	43,98,542	31.20	14.10	2.80	2.49

Source: Compiled by Authors.

Table 2

Assam: Region-wise, Percentage of Urban Population and Growth Rate of Urban Population

Geographical Regions	Annual Growth Rate of Urban Population 1991-2011(per cent)	Percentage Share of Urban Population		Percentage of Urban Population	
		1991	2011	1991	2011
Hill Region	2.60	4.22	3.99	14.81	14.99
Upper Brahmaputra Valley	2.57	26.04	24.47	12.47	13.99
Middle Brahmaputra Valley	2.82	16.34	16.14	8.38	9.51
Lower Brahmaputra Valley	2.87	44.81	44.64	16.16	17.45
Barak Valley	4.05	8.59	10.76	9.38	13.06
Assam	2.89	100	100	11.10	14.10
India	2.79	-	-	25.72	31.20

Source: Compiled by Authors.

population during 1991-2011 has also been extremely slow in all other geographical regions. Such a slow pace of urbanization in the state has been associated with low transport accessibility, lack of required economic

diversification including industrialization and poor educational development. Out of the five geographical regions, Upper Brahmaputra Valley, Hill Region and Lower Brahmaputra Valley have been found more urbanized than

the state average in 1991. However, among these regions, Lower Brahmaputra Valley and Hill Region could maintain its position in 2011.

Growth of Urban Population

The urban population growth rate in Assam did not remain uniform throughout the century. The annual growth rate in Assam in the pre-independence period increased from 1.89 per cent during 1901-1911 to 2.52 per cent during 1931-1941 as against 0.03 per cent to 2.81 per cent recorded by India as a whole (Table 1). During this period India surpassed Assam, in growth of urban population. However, after independence, the urban population in Assam increased very rapidly by witnessing a growth rate of 8.52 per cent, while the urban population in India declined by 2.37 per cent during 1951-61. It is conspicuous to note that the country's growth rate accelerated up to 3.88 per cent during 1971-81, i.e., the highest urban growth rate since independence, while during this period Assam recorded 3.29 per cent growth rate i.e., less than India. After 1981, the country experienced decline in growth rate in subsequent decades, with slight improvement in 2001-2011. Similarly, Assam has experienced highest growth rate of 8.52 per cent during 1951-1961, but afterwards it experienced very uneven growth rate in the following decades, which declined to 2.49 per cent during 2001-2011, against the national average of 2.80 per cent.

Region-wise, there has been a marked spatial variation in the growth rate of urban population. Among the five geographical regions, it has been as high as 4.05 per cent in Barak Valley to as low as 2.57 per cent in Upper Brahmaputra Valley during 1991-2011 (Table 2). Except Barak Valley, there is no other region in the state where the growth rate of

urban population is greater than the state average of 2.89 per cent and the national average of 2.79 per cent. Thus, Assam maintains its high position in the growth rate as compared to the India as a whole during 1991-2011.

Considerably high growth rate of urban population in the state of Assam has been due to the emergence of a number of new urban centres and higher natural growth rate. This is also reflected in the analysis of components of urban population growth during 1971-2011. Of the three broad components, the contribution of migration has been very high (40.87 per cent) during 1971-1991. Similarly, the contribution of reclassification of urban centres which included emergence of new urban centers has been remarkable (49.21 per cent) during 1991-2011 (Table 3). At the same time the contribution of natural growth of urban population has also not been insignificant both during 1971-1991 (39.12 per cent) and 1991-2011 (35.87 per cent) periods.

Size-Class Distribution of Urban Centres

On the basis of size of population, the Census of India has divided urban centres into six categories such as, Class I, Class II, Class III, Class IV, Class V, and Class VI towns. An important aspect of urbanization all over the state is the prevalence of uneven pattern of development of small towns and big cities and their distribution within the system (Fig. 2). The urban system of Assam is characterized by the presence of a few large cities and a large number of small towns. The large cities although smaller in number account for a larger share of the total urban population of the state, while the small towns, despite their larger numbers, account for a smaller share. The distribution pattern of these urban centres varies spatially from one area to another, and

Table 3
Assam: Components of Urban Population Growth

Year	Total Urban Population	Absolute Increase	Contribution of Different Components to Urban Population Growth (per cent)		
			Natural Growth	Reclassification	Migration and Urban Area Expansion
1971	12,89,222	-	-	-	-
1991	24,87,795	11,98,573	39.12	20.01	40.87
2011	43,98,542	19,10,747	35.87	49.55	14.58

Source: Compiled by Authors.

hence varying pattern of spatial distribution of urban settlements is observed in Assam. Being influenced by locational situation, terrain condition and socio-economic disparities, the distribution pattern of these urban centres has been found to be significantly uneven both spatially and temporally (Bhagabati, 1996). The number of urban centres in Assam which has been 70 in 1971, further increased to 214 in

2011 (Table 4). Out of 214 towns, 88 are statutory towns and 126 are census towns distributed unevenly across the state of Assam.

As far as size-class distribution of urban centres is concerned, the number of class I urban centres has increased from 1 in 1971 to 6 in 2011. Before 1991 there has been only one class I city, viz. Guwahati. In 1991 three more class I cities like Dibrugarh, Jorhat and Silchar

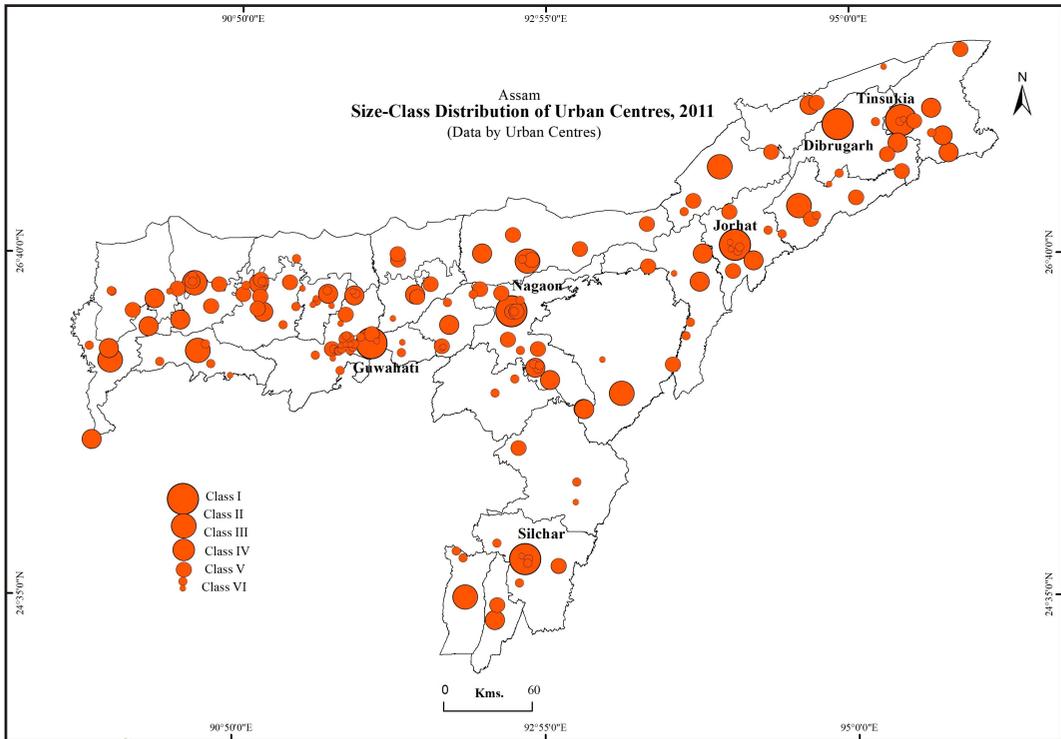


Fig. 2

Table 4
Assam: Size and Class-wise Distribution of Urban Centres and Urban Population

Size Class of Towns	Number of Urban Centres			Share of Urban Population (per cent)			Annual Growth Rate of Urban Population 1971-2011(per cent)
	1971	1991	2011	1971	1991	2011	
I	1	4	6	15.54	37.46	37.54	5.41
II	5	4	8	24.44	11.60	11.12	1.10
III	8	19	26	18.86	23.32	17.42	2.91
IV	26	34	52	26.68	19.52	16.22	1.84
V	22	21	94	12.45	6.33	15.16	3.62
VI	8	12	28	2.03	1.77	2.54	3.70
Total	70	94	214	100	100	100	-

Source: Compiled by Authors.

have been added in class I category. Another two towns of Tinsukia and Nagaon joined this category of towns in 2011 (Fig. 2). The class I cities, have increased in number on account of conversion of lower order towns into class I category due to municipal area expansion, large-scale migration from other areas and increase in population. As a consequence, the proportion of population of the class I urban centres has increased from 15.54 per cent in 1971 to 37.54 per cent in 2011, by recording highest annual growth rate of 5.41 per cent (Table 4). On the other hand, although there has been a marked increase in the number of small towns belonging to class V and VI categories from 30 in 1971 to 122 in 2011, their percentage share of population has witnessed a very small improvement from 14.48 per cent to 17.70 per cent during the same period. Further, it has been observed that the large urban centres numbering 14 (Class I and Class II) constitute 48.66 per cent of total urban population (Table 4). This phenomenon is indicative of the fact that the cities and large urban centres are growing faster in size as compared to the small towns. Further, it has been noticed that towns of class II and III

category have increased in number from 5 to 8 (class II) and from 8 to 26 (class III) during 1971-2011, but their share of urban population has declined from 24.44 per cent to 11.12 per cent in class II category and 18.86 per cent to 17.42 per cent in class III category during the same period. Similarly, the number of class IV and V categories of towns respectively increased from 26 to 52 (Class IV) and 22 to 94 (class V) during 1971-2011. But the share of population of class IV towns declined from 26.68 per cent in 1971 to 16.22 per cent in 2011, while of class V towns increased from 12.45 per cent in 1971 to 15.16 per cent in 2011. Thus, the study shows that the towns of all categories have increased in number, but an increase in share of population has been witnessed only in case of class I, V and VI categories of towns. Annual growth rate of population varies as high as 5.41 per cent in class I category to as low as 1.10 per cent in class II category. Leaving aside class I towns, the annual growth rate of population of class V and VI category has been found higher among all other categories of towns (Table 4).

The nature of urbanization and its spatial structure in the state can further be understood

through rank-size relationship analysis and primacy index. An analysis of rank-size relationship of urban centres for 1971, 1991 and 2011 reveals that the pattern of urbanization resulted by all categories of urban centres in the state has not been balanced. Most of the small towns have remained under the shadow of large urban centres, more particularly the Guwahati city. It means that the largest city Guwahati along with some other class I urban centres have experienced faster growth of population than expected as per rank-size relationship (Fig. 3). In fact, the dominance of Guwahati city as an agglomerative force has remained to continue during the study period. This phenomenon further reveals that the number and growth of cities is increasingly being determined by the location of tertiary activities which are market oriented and which have more agglomerative

tendencies (Das and Dutt, 1993).

As far as urban primacy of the urban system of Assam is concerned, it is dominated by the primate city of Guwahati, which has been experiencing an agglomerative form of population concentration. Moreover, Guwahati city is dominating the urban landscape of not only Assam but also of entire north-east India. Guwahati, being one of the oldest urban centres, has become the leading economic, social, cultural and political nerve centre of the state. In fact, it is the fastest growing city both in population size and spatial dimension due to industrialization, increasing urban amenities and highly diverse economic activities. Under such situation the primacy index of Guwahati city over its second largest city of the state (Dibrugarh) has witnessed marked increase from 2.49 times in 1971 to 4.86 times in 1991

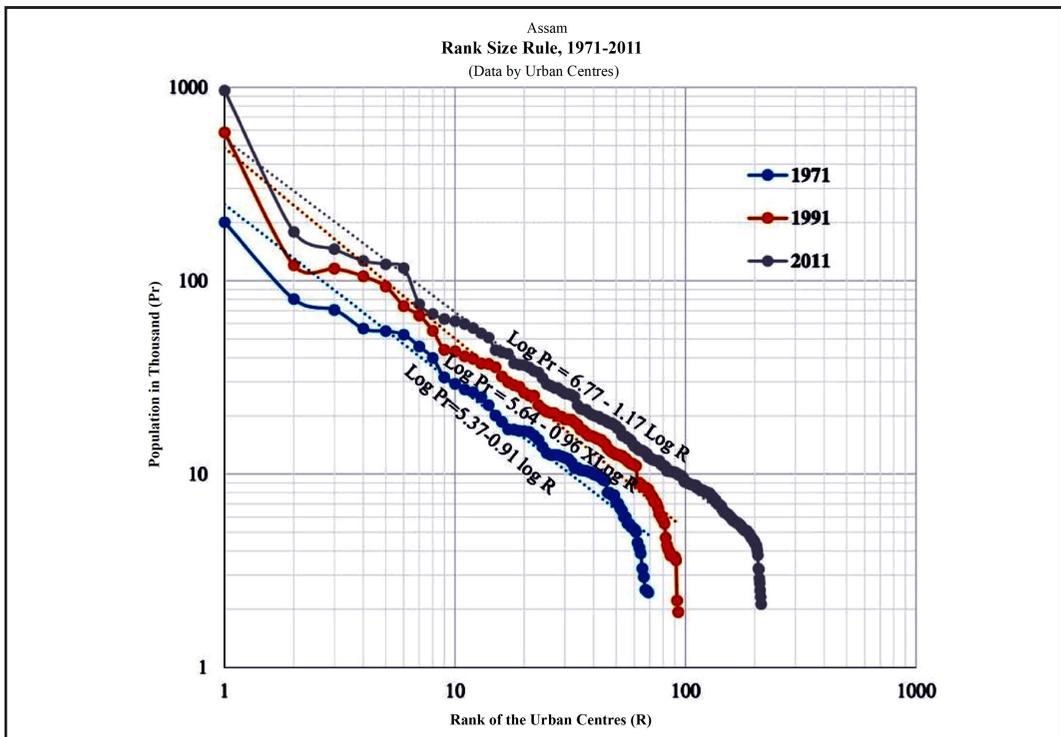


Fig. 3

and 5.38 times in 2011 with second largest city of Silchar as against the theoretical value of 2. Further, the values of primacy index have been increasing decade after decade, suggesting growing dominance of the primate city (Table 5). This is also indicative of the prevailing imbalance in the urban system of the state.

Levels of Urbanization

Although Assam is well-endowed with various mineral and forest resources, productive land, huge hydropower potential and extensive area under tea and jute cultivation, yet the level of urbanization has been quite low, largely due to industrial and economic backwardness. Due to rugged topography, poor transport and communication and low level of economic development, urbanization has also been spatially uneven. Most of the large urban centres of the state are located in the Brahmaputra valleys (Upper, Middle and Lower) and Barak valley regions. The level of urbanization is spatially so uneven that at district level it varies from as high as 82.70 per cent in capital city Guwahati-based Kamrup Metro district to as low as 1.29 per cent in Baksa district (Table 6). Based on levels of urbanization, the state of Assam has been divided into five categories.

Areas of Very High Level of Urbanization

The districts recording more than 40 per

cent of urban population have been included in this category of areas. Among 27 districts of the state only Kamrup Metro district falls in this category (Fig. 4). The district is so urbanized that about 83 per cent of its population is living in urban areas, which accounts for 23.57 per cent of total urban population of the state. Apart from Guwahati, the capital city, the region has 1 class IV, 7 class V and 3 class VI towns. Thus, it is highly urbanized region of the state. The administrative set-up, political influence, the level of industrial development, plain topography along with the well-developed roads and railways, and high level of social development are the factors responsible for high level of concentration of urban population in this region. In fact, such a high concentration of urban population in this region is only on account of the location of primate city of Guwahati, which has been experiencing agglomerative tendency of population concentration being the capital of Assam.

Areas of High Level of Urbanization

The districts with 20-40 per cent of urban population have been included in this category. Thus, only two districts namely Dima Hasao and Jorhat fall in this category. The region having 7.41 per cent share among the districts accounts for 6.43 per cent of the total urban population of Assam. This indicates that although the areas falling in this category have

Table 5
Assam: Trend of Primacy in Urban System

Year	1 st Ranking Urban Centres and Population	2 nd Ranking Urban Centres and Population	Primacy Index
1971	Guwahati (2,00,377)	Dibrugarh (80,348)	2.49
1991	Guwahati (5,84,342)	Dibrugarh (1,20,127)	4.86
2011	Guwahati (9,62,334)	Silchar (1,78,865)	5.38

Source: Compiled by Authors.

Table 6
Assam: District-wise Levels of Urbanization and Composite Z-Scores of Urban Development, 2011

Districts	Urban Population (per cent)	Composite Z-Scores	Districts	Urban Population (per cent)	Composite Z-Scores
Kamrup Metro	82.70	17.10	Golaghat	9.16	4.99
Dima Hasao	29.19	1.01	Sonitpur	9.04	6.69
Jorhat	20.19	8.67	Karimganj	8.93	5.23
Tinsukia	19.94	4.00	Lakimpur	8.76	-2.54
Dibrugarh	18.38	9.67	Barpeta	8.70	0.12
Cachar	18.17	3.51	Morigaon	7.66	-5.98
Bongaigaon	14.86	5.42	Chirang	7.33	-8.70
Goalpara	13.69	-14.80	Dhemaji	7.04	-8.49
Nagaon	13.09	-1.93	Hailakandi	7.03	6.43
Karbi Anglong	11.81	-8.79	Kokrajhar	6.19	2.49
Nalbari	10.72	-0.72	Darrang	5.98	-0.86
Dhubri	10.45	-7.89	Udalguri	4.52	-1.40
Sivasagar	9.56	7.33	Baksa	1.29	-18.30
Kamrup	9.38	-2.22	State	14.10	-

Source: Compiled by Authors.

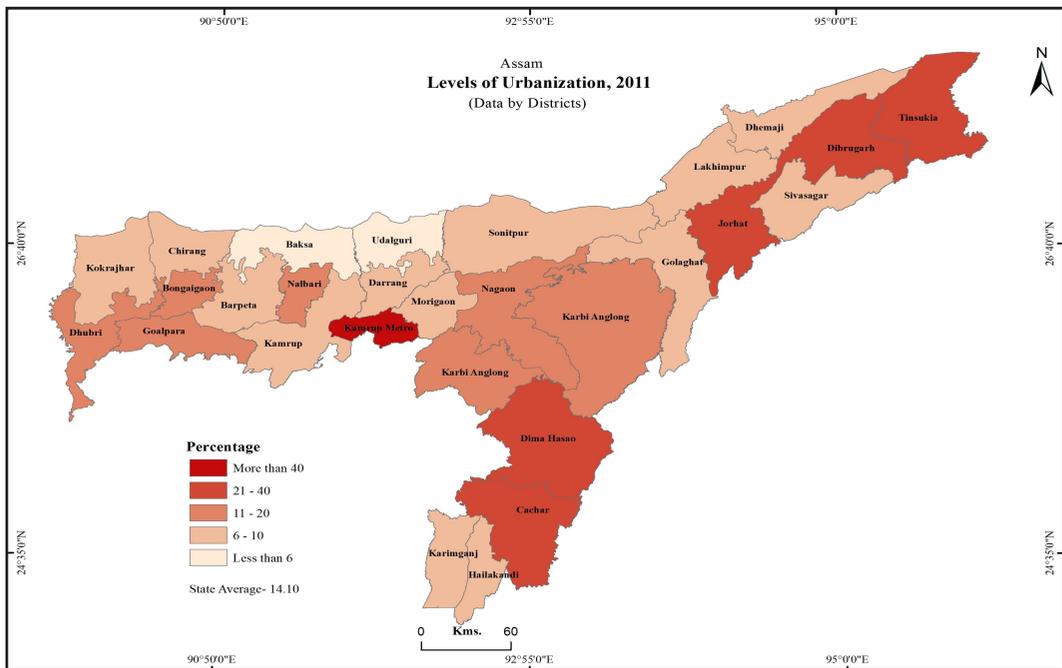


Fig. 4

high level of urbanization, yet its share in the total urban population of the state is very low. The region has only one class I town, 2 class III towns, 3 class IV towns, 6 class V towns and 3 class VI towns. Thus, urban population is mostly confined to the higher order and medium towns. The high level of socio-economic development, better education facilities, various job opportunities, diverse economic activities, influence of tea gardens are responsible for high level of concentration of urban population in this region.

Areas of Moderate Level of Urbanization

The districts with urbanization rates varying from 10 to 20 per cent have been included in this category. The areas of moderate urbanization level comprise nine districts of Tinsukia, Dibrugarh, Cachar, Bongaigaon, Goalpara, Nagaon, Karbi Anglong, Nalbari and Dhubri (Table 6). This category having 33.33 per cent share among 27 districts of Assam accounts for nearly 42 per cent of the total urban population. Thus, the region having 4 class I cities, 4 class II towns, 13 class III towns, 22 class IV towns 46 class V towns and 12 class VI towns' accounts for highest share in the total urban population of the state than its share in the administrative setup of the state. Predominance of small towns indicates that due to low degree of industrialization, the urban agglomerative forces are weak. Poor means of transportation, predominance of urban-to-urban migration and low rural-urban migration are other factors resulting moderate level of urbanization.

Areas of Low Level of Urbanization

Thirteen districts like Sivasagar, Kamrup, Golaghat, Sonitpur, Karimganj, Lakhimpur, Barpeta, Morigaon, Chirang,

Dhemaji, Hailakandi, Kokrajhar and Darrang with urbanization levels varying from 5 to 10 per cent are included in this category of areas. The study reveals that the degree of urbanization in these districts is much lower than the state average of 14.10 per cent in 2011. These thirteen districts having 48.15 per cent share among the districts of state accounts for 27.01 per cent in the total urban population in Assam. Thus, the region has more share in the administrative setup than its share in the urban population of the state. The region has no class I city, while there are 4 class II towns, 11 class III towns, 24 class IV towns, 32 class V towns, and 10 class VI towns. Out of the total, 81 per cent are small towns, indicating socio-economic backwardness of the region where economy is predominantly agricultural with low level of education and employment opportunities. Hence, level of urbanization is low.

Areas of Very Low Level of Urbanization

Baksa and Udalguri are the two least urbanized districts of the state where less than 5 per cent of the people are living in urban areas. There are only 2 class IV and 3 class V towns in the region. In Baksa district only 1.29 per cent and in Udalguri district 4.52 per cent population is living in very small urban centres. In fact, the region has predominately rural environment where urban agglomerative forces are totally missing.

Predominance of low level of urbanization in Assam is on account of rugged mountainous topography, thick covers of forest, dependence on primary economic activities, poor transportation, power and educational infrastructure. The power sector of the state is so weak that more than 70 per cent households of the state are still depending on kerosene oil

as source of household lighting due to non-availability of electricity connections (Chamar and Chamar, 2020).

It is further observed that the level of urbanization in Assam has witnessed considerable increase during the last four decades (from 8.81 per cent in 1971 to 14.10 per cent in 2011). However, the distribution of urban population is spatially imbalanced across the state. This phenomenon has also been reflected in the Lorenz curve, which shows uneven distribution of urban population both in 1991 and 2011. The value of Gini's Coefficient which has been 0.11 in 1971, further increased to 0.37 in 2011, suggesting that level of imbalanced urbanization is increasing with time in Assam (Fig. 5). In fact, urbanization in Assam has been confined to a few scattered pockets surrounding class I urban centres.

Levels of Urban Development

In general, urbanization and urban development go hand in hand. In other words, the process of urbanization, which is largely associated with expansion of non-agricultural sector, concentration of infrastructure and mobilization of resources in any area, results in socio-economic development of the urban areas and enhances the quality of life of the urban dwellers, which is indicative of urban development. This phenomenon is well reflected in the existence of positive relationship (coefficient of correlation, 0.55) between levels of urbanization and urban development in the case of Assam. Urban development is basically the cumulative performance of a number of development attributes relating to infrastructure and socio-economic attributes in urban context, and it varies spatially depending on a variety of

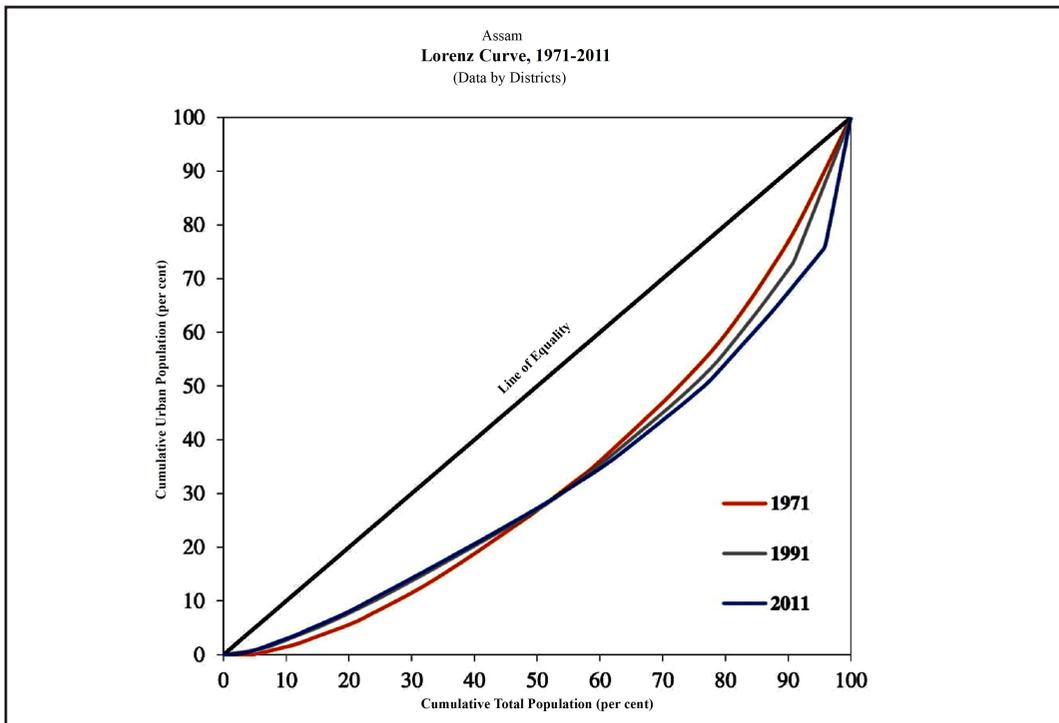


Fig. 5

related factors. Although urban development in an area depends on its level of urbanization, yet it also contributes to a great extent to the growth of urbanization in an area due to its bi-directional relationship. When urbanization in an area is accompanied by expansion of basic amenities like sanitation, proper housing facility, drinking water facility, electricity etc., it experiences fast growth of population in urban areas due to migration and area expansion. As a result, urban development exerts strong positive force towards urban growth. So far as the spatial pattern of urban development in Assam is concerned, it presents a highly varied picture depending on historical background, locational

advantages and disadvantages, degree of urbanization, infrastructural base, household amenities and socio-economic condition of the urban dwellers. Among the districts, the value of composite z-score of urban development has been found to be the highest in case of Kamrup Metro (17.10), followed by Dibrugarh (9.67), and lowest in Baksa (-18.30), followed by Goalpara district (-14.80) (Table 7). However, in order to have a detailed picture of the spatial pattern of urban development in the state and the factors associated with it, the 27 districts of Assam have been grouped into five categories based on their composite z-scores of urban development.

Table 7
Assam: District-wise, Indicators and Composite Z-Scores of Urban Development, 2011

Districts	Indicators of Urban Development										Composite Z Score
	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	
Kamrup Metro	82.70	91.19	98.44	23.67	9.46	92.29	85.22	29.97	58.67	72.47	17.10
Dibrugarh	18.38	90.11	98.49	17.27	9.41	91.24	76.52	32.12	60.19	64.51	9.67
Jorhat	20.19	90.39	96.16	17.58	9.61	86.82	71.63	59.07	54.17	60.50	8.67
Sivasagar	9.56	90.92	98.25	16.28	10.07	90.16	74.12	35.02	56.76	58.64	7.33
Sonitpur	9.04	89.73	97.77	15.45	9.72	87.36	72.89	20.70	59.78	65.37	6.69
Hailakandi	7.30	92.93	97.31	11.97	9.68	84.35	61.31	64.48	53.41	62.38	6.43
Bongaigaon	14.86	87.37	98.03	14.40	10.15	80.74	71.86	25.93	58.08	67.66	5.42
Karimganj	8.93	92.82	98.07	10.62	10.60	78.96	65.41	45.81	59.46	66.73	5.23
Golaghat	9.16	91.74	96.64	15.63	9.90	89.17	73.04	28.41	49.07	50.56	4.99
Tinsukia	19.94	87.22	97.55	11.25	10.05	87.77	70.11	21.69	56.57	54.13	4.00
Cachar	18.17	88.99	98.19	12.01	10.81	79.59	57.77	63.27	48.15	55.57	3.51
Kokrajhar	6.19	87.86	96.93	13.32	10.06	85.67	62.93	5.03	52.86	65.15	2.49
Dima Hasao	29.19	92.24	94.02	9.58	11.76	90.75	57.89	40.37	45.87	40.47	1.01
Barpeta	8.70	86.28	96.55	11.67	9.86	79.70	64.01	8.34	41.33	62.18	0.12
Nalbari	10.72	89.89	92.20	13.63	9.16	78.67	56.74	10.59	33.86	58.52	-0.72
Darrang	5.98	85.92	97.65	13.04	9.90	80.84	59.06	6.61	40.30	52.97	-0.86
Udalguri	4.52	85.14	97.68	9.44	9.64	82.99	55.36	8.39	46.33	50.61	-1.40
Nagaon	13.09	87.23	94.88	10.47	10.59	78.41	57.48	18.06	44.89	47.99	-1.93
Kamrup	9.38	87.89	93.15	9.27	9.28	79.47	59.94	13.12	32.66	54.10	-2.22
Lakhimpur	8.76	86.93	91.33	14.22	11.44	79.82	60.45	19.41	43.08	49.61	-2.54
Morigaon	7.66	84.17	90.18	10.49	11.87	75.45	55.76	13.23	43.27	50.37	-5.98
Dhubri	10.45	82.28	95.39	8.93	11.28	66.92	45.68	6.29	33.25	50.82	-7.89
Dhemaji	7.04	84.02	90.28	13.88	12.21	75.23	55.69	6.15	27.15	38.42	-8.49
Chirang	7.33	81.28	98.15	6.89	11.43	66.32	40.46	3.55	38.02	48.21	-8.70
Karbi Anglong	11.81	87.89	85.55	8.11	11.75	80.33	49.18	15.26	38.33	30.52	-8.79
Goalpara	13.69	76.08	91.81	6.77	14.14	64.72	41.96	3.49	29.47	42.26	-14.80
Baksa	1.29	74.54	86.59	5.17	12.58	66.24	32.71	2.58	26.25	32.88	-18.30
Mean	13.85	87.15	95.08	12.26	10.61	80.74	60.56	22.48	45.60	53.84	-
Standard Deviation	14.95	4.58	3.71	3.96	1.21	7.89	11.98	18.59	10.72	10.70	-

Source: Compiled by Authors.

Areas of Very High Level of Urban Development

The districts of Kamrup Metro and Dibrugarh by recording composite z-score value of 9.0 and above fall under this category of areas (Fig. 6). Among these, Kamrup Metro district is from Lower Brahmaputra valley, while Dibrugarh district is from Upper Brahmaputra valley. With 49.64 per cent of overall level of urbanization, this region constitutes 29.12 per cent of the total urban population of the state. Although Kamrup Metro district has very high level of urbanization (82.70 per cent), yet its performance in respect of proportion of urban literates with graduation and above level of education, proportion of urban population in 0-6 age

group and proportion of urban households having water supply is not adequate. It is largely due to large scale rural-urban migration of illiterate labourers to Guwahati city, prevalence of agricultural practices in the peripheral areas, and lack of adequate coverage of fast-growing population. On the other hand, the district of Dibrugarh with considerably low urbanization level (18.38 per cent) has performed better than Kamrup Metro with respect to proportion of urban literates with educational level graduation and above, urban water supply and sanitation conditions.

Areas of High Level of Urban Development

With composite z-score value of 3.0-9.0, as many as 9 districts of Assam fall in this

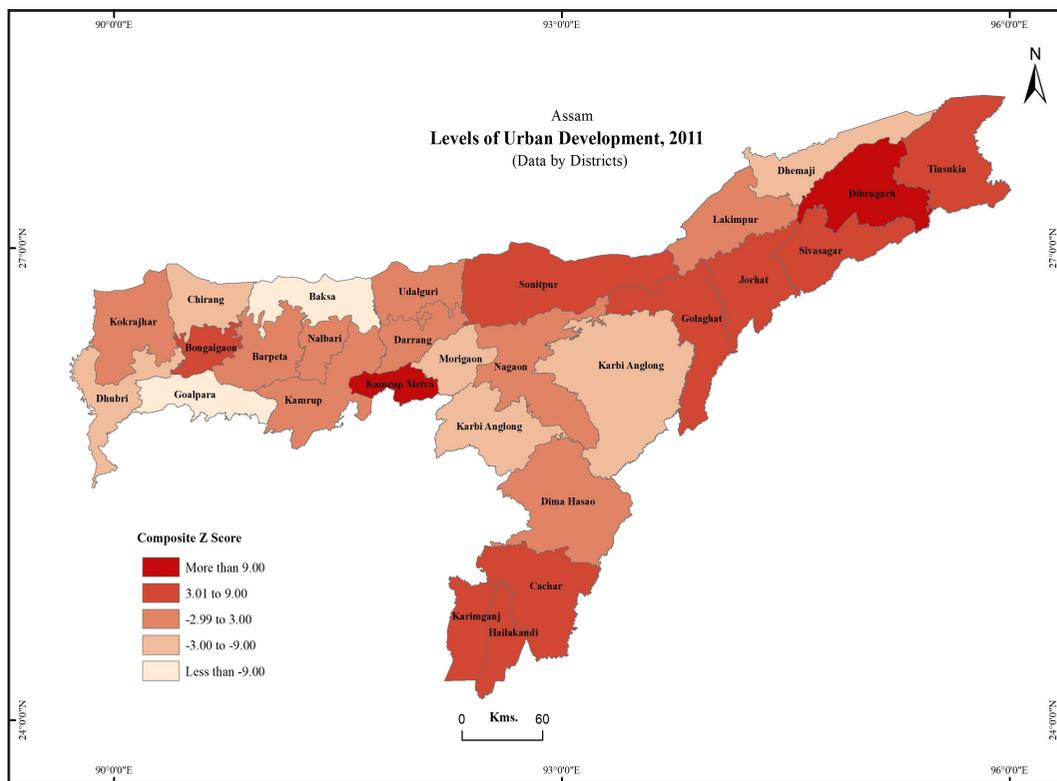


Fig. 6

category of areas (Table 7). This category includes the district of Bongaigaon from Lower Brahmaputra valley; Cachar, Hailakandi and Karimganj from Barak valley; Jorhat, Sivasagar, Tinsukia and Golaghat from Upper Brahmaputra valley; and Sonitpur district from Middle Brahmaputra valley. The region with 32.97 per cent share of total urban population of the state has overall urbanization level of 13.27 per cent. Among the districts, Jorhat and Bongaigaon with somewhat high urbanization level (above state average) have witnessed an encouraging position in urban development with respect to all indicators. On the other hand, despite having high urbanization level (considerably above state average) Tinsukia district has not been able to perform well in urban literacy rate, proportion of urban literates with educational level of graduation and above, proportion of urban households having water supply, and proportion of urban households having permanent house. Similarly, Cachar district has not been able to perform satisfactorily in proportion of urban literates with educational level of graduation and above, proportion of urban population in 0-6 years of age, proportion of urban households having electricity, and proportion of urban households having LPG as fuel for cooking. However, among the remaining five districts in this category which have urbanization level considerably below the state average, Sivasagar, Sonitpur and Hailakandi districts occupy a relatively better position in urban development as compared to Karimganj and Golaghat, districts. It is surprising to note that the districts with very low level of urbanization such as Hailakandi (7.03 per cent), Karimganj (8.93 per cent), Sonitpur (9.04 per cent), Golaghat (9.16 per cent) and Sivasagar (9.56 per cent) are falling in this category. Although these

districts have very low level of urbanization, yet their performance in most of the indicators of urban development is quite high. Sivasagar district has performed well in all indicators. The district Sonitpur rendered well in all indicators except, proportion of urban households having water supply; Golaghat district in all indicators, except proportion of urban households having permanent house. Hailakandi, district has not performed well in proportion of urban literates with educational level of graduation and above and proportion of urban households having LPG gas as fuel for cooking. Similarly, Karimganj district has performed well in most of the indicators except proportion of urban literates with educational level of graduation and above, proportion of urban population in 0-6 years of age and proportion of urban households having electricity. In fact, all the districts have rendered well in majority of the indicators of urban development, hence fall in this category.

Areas of Moderate Level of Urban Development

This category of moderate urban development with composite z-score of -2.99 to 3.00 altogether constitutes nine districts. Among these, 4 districts (Barpeta, Kamrup, Kokrajhar and Nalbari) are from Lower Brahmaputra valley, 3 districts (Darrang, Nagaon and Udalguri), are from Middle Brahmaputra valley, one district (Lakhimpur) from Upper Brahmaputra valley and one district (Dima Hasao) from Hill region. These districts account for 23.73 per cent of the state's total urban population with overall urbanization level of 9.75 per cent. Except Dima Hasao, all other districts have recorded level of urbanization considerably below the state average. Kokrajhar, Dima Hasao and Barpeta

districts have recorded composite z-score ranging between 0.0 to 3.0, while 0.0 to -3.0 z scores have been witnessed by the districts of Nalbari, Darrang, Udalguri, Nagaon, Kamrup and Lakhimpur. Among the first three districts, despite prevalence of considerably low level of urbanization, Kokrajhar performs somewhat better in all indicators of urban development except proportion of urban households having water supply. On the other hand, although Dima Hasao district has recorded very high level of urbanization (29.29 per cent), yet its position is not so satisfactory in urban development due to its poor performance in proportion of urban non-agricultural workers, proportion of urban literates with educational level of graduation and above, proportion of urban population of 0-6 years of age, proportion of urban households having LPG as fuel for cooking and proportion of urban households having permanent house. Having characterised by low level of urbanization, Barpeta district also presents a discouraging picture with respect to urban literacy rate, proportion of urban literates with educational level of graduation and above, proportion of urban households having electricity, proportion of urban households having water supply and proportion of urban households having better sanitation. So far as the remaining districts of Nalbari, Darrang, Udalguri, Nagaon, Kamrup and Lakhimpur are concerned, their performance in number of indicators of urban development is found to be low; hence these districts have recorded negative z scores of urban development.

Areas of Low Level of Urban Development

The category of low urban development comprises of five districts recording composite z-score values ranging between -3.00 and -9.00. The districts falling in this category

include Chirang and Dhubri districts from Lower Brahmaputra valley; Dhemaji from Upper Brahmaputra valley; Morigaon from Middle Brahmaputra valley and Karbi Anglong from Hill region. The areas of low level of urban development account for 10.77 per cent of the state's urban population with overall urbanization level of 9.41 per cent. Although all the districts occupy almost a uniformly low level of urban development, yet the position is slightly better in case of Morigaon and worst in case of Karbi Anglong district. In fact, the performance of individual indicators towards urban development has been quite low in all the districts with the exception of proportion of urban non-agricultural workers in Dhubri district; proportion of urban literates with educational level of graduation and above in Dhemaji district; proportion of urban non-agricultural workers in Chirang district, and urban literacy rate in Karbi Anglong district. This is indicative of a phenomenon of prevalence of poverty and lack of adequate urban infrastructure and amenities in these districts.

Areas of Very Low level of Urban Development

With composite z-score of below -9.0, the districts of Baksa and Goalpara located in Lower Brahmaputra valley; fall in this category of areas. In fact, Baksa district, which occupies the lowest position in urbanization level (1.29 per cent) and urban development (Composite z-score of -18.30) in the entire state, is characterised by very poor performance on all fronts of urban development. Similarly, despite having (13.69 per cent) level of urbanization slightly below state average, the district of Goalpara has also witnessed a very poor performance in all indicators of

Table 8
Assam: Region-wise Indicators and Composite Z-Scores of Urban Development, 2011

Geographical Regions	Indicators of Urban Development										Composite Z Score
	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	
Hill Region	14.99	89.11	88.87	8.63	11.75	84.05	52.29	24.22	41.02	34.08	-9.91
Upper Brahmaputra Valley	13.99	89.16	96.65	15.22	10.02	87.50	72.02	33.01	53.78	58.11	6.65
Middle Brahmaputra Valley	9.51	87.32	95.49	11.87	10.40	80.82	61.25	16.80	48.23	53.21	-5.44
Lower Brahmaputra Valley	17.45	88.01	96.88	17.53	10.09	86.19	71.82	21.01	49.60	64.78	5.97
Barak Region	13.06	90.29	98.08	11.68	10.65	79.93	59.88	59.40	51.27	58.82	2.73
Mean	13.80	88.78	95.19	12.98	10.58	83.70	63.45	30.89	48.78	53.80	-
Standard Deviation	2.60	1.02	3.27	3.08	0.63	2.94	7.56	15.22	4.30	10.52	-

Source: Compiled by Authors.

urban development including worst performance in urban literacy rate and proportion of urban population of 0-6 years of age. In fact, in urban areas of these districts, there is a predominance of rural environment, where urban amenities are still missing.

From the above discussion on the spatial variation in the levels of urban development, it is clear that although rise in urbanization level contributes to urban development to a great extent, yet the influence of urban infrastructure and amenities, and prevailing socio-economic condition of the urban dwellers including poverty, illiteracy and rural-urban migration of poor and uneducated people has also been no less significant. Among the five geographical regions of the state, the urban development has been found to be the highest in Upper Brahmaputra valley (composite z-score of 6.65), followed by Lower Brahmaputra valley (composite z-score of 5.97), and lowest in Hill region (composite z-score of -9.91), followed by Middle Brahmaputra valley (composite z-score of -5.44) (Table 8). On the other hand, the urbanization level has been the highest in Lower Brahmaputra valley (17.45 per cent), followed by Hill region (14.99 per cent), and the lowest in middle Brahmaputra valley (9.51 per cent).

Conclusions

The foregoing analysis reveals that the pace of urbanization in Assam has been very slow until independence. It gained momentum only after 1961. It is evident that difficult terrain condition and almost rural agro-based economy have altogether kept the level of urbanization in the state at much lower level as compared to the country as a whole. With regards to the components of urban population growth in the state, the contribution of

migration and urban area expansion has been very high during 1971-1991 and the contribution of many newly emerged urban centers has been remarkable during 1991-2011. It is worth mentioning that about 50 per cent of the total urban population in the state as per 2011 Census, has been concentrated in the large urban centres (Class I and Class II) numbering 14. It thus reflects that existing urban structure which has basically grown up in the colonial period does not present a well-articulated spatial system characterized by a balanced hierarchical order. In view of this, the primacy index of Guwahati city over second ranking Silchar city as per 2011 Census has been found to be as high as 5.38. On account of the spatial variation in the pattern of urbanization Kamrup Metro district records the highest position and the district of Baksa the lowest. At regional level, however, the upper Brahmaputra valley occupies the highest position and the hill region the lowest.

Another important finding of this study is that the growth in level of urbanization contributes to the increase in the level of urban development. In this context, both Kamrup Metro district and Baksa district with highest and lowest level of urbanization, respectively correspond to the highest and lowest level of urban development. However, there exists marked spatial variations in level of urbanization among the districts and in the same way the level of urban development also varies significantly. The physical constraints combined with lack of adequate transport accessibility and resource mobilization have been found to be responsible for industrial backwardness and consequent low level of urbanization and urban development in most parts of the state. Although there has been emergence of many small towns in recent times due to improve-

ment in transport connectivity and growing administrative centres across the state, yet the faster growth of the cities like Guwahati, Silchar, Dibrugarh, Jorhat, etc. has still kept the regional pattern of urbanization and urban development imbalanced. Hence, there is a need for a balanced and well-coordinated urbanization and urban development in Assam for socio-economic sustainability.

References

- Bhagat, R.B. and Mohanty, S. 2009. Emerging pattern of urbanization and the contribution of migration in urban growth in India. *Asian Population Studies*, 5 (1): 5-19.
- Bhagabati, A.K. 1996. Patterns of urbanization in the peripheries of India: the case of North Eastern Border Region. *North Eastern Geographer*, 27 (1&2): 20-28.
- Boterman, W.R., Manting, D. and Musterd, S. 2017. Understanding the social geographies of urban regions through the socio-economic and cultural dimension of class. *Population Space Place*, 24 (5): e2130.
- Brockhoff, M. 1999. Urban growth in developing countries: a review of projections and predictions. *Population and Development Review*, 25 (4): 757-778.
- Chamar, K.V. and Chamar, S.K. 2020. Access to sources of lighting among households in rural India. *Punjab Geographer*, 16: 75-94.
- Chetry, R. and Kar, B.K. 2014. Urban myth and reality: the state of urban growth and development in Assam. *Journal of Humanities and Social Science*, 19 (9): 9-17.
- Das, R.J. and Dutt, A.K. 1993. Rank-size distribution and primate city characteristics in India: a temporal analysis. *Geo Journal*, 29 (2): 125-137.
- Kundu, A., Pradhan, B.K., Subramanian, A. 2002. Dichotomy or continuum: an analysis of impact of urban centres on their periphery, *Economic and Political Weekly*, 37 (50): 5039-5046.
- Kundu, A. 2011. *Trends and processes of urbanization in India*. International Institute for Environment and Development, Human Settlement Group, Population and Development Branch, NUFPA, Urbanization and Emerging Population Series, No 6: 1-54
- Krishan, G. 2018. The challenge of massive urbanization for sustainable urban development. *Punjab Geographer*, 14: 1-3.
- Kusumantoro, I.P., Fajri, H., Rachmat, S.Y. and Rachmalia, M. 2009. The impact of settlement spatial pattern in fringe area to community movement, case study: Bandung city, *Eastern Asia Society for Transportation Studies*, 7: 198.
- McGill, R. 1998. Urban management in developing countries. *Cities*, 15 (6): 463-471.
- Mohan, R. and Dasgupta, S. 2005. The 21st century: Asia becomes urban. *Economic and Political Weekly*, 40 (3): 213-223.
- Raj, N., Thakur, B.R. and Chand, P. 2019. Levels of regional disparities in socio-economic development in Himachal Pradesh and Uttarakhand States. *Punjab Geographer*, 15: 64-78.
- Shaban, A., Kourtit, K. and Nijkamp, P. 2020. India's urban system: sustainability and imbalanced growth of cities. *Sustainability*, 12 (7): 2941-2961.
- Sharma, K.D. 2011. Emerging trends and structure of urbanization in India: issues

- and challenges. *Punjab Geographer*, 7: 1-8.
- Singh, K. 2017. Implementation of urban mission: inclusive cities, sustainable technologies and smart infrastructure. *Punjab Geographer*, 13: 7-16.
- Sultana, C. and Aktar, N. 2016. Regional imbalances in the levels of socio-economic development: a case study of Malda District, West Bengal. *The NEHU Journal*, 14 (1): 69-86.
- United Nations, Department of Economic and Social Affairs (UN-DESA). 2019. *World Urbanization Prospects: The 2018 Revision*, New York: United Nation, 1-10.
- United Nations Human Settlements Programme, (UN-Habitat). 2016. *Urbanization and Development Emerging Futures World Cities Report*, Kenya. 61-64.
- Sriparna Das**, Research Scholar,
Email: mistusri25thmay@gmail.com
(Author for Correspondence)
- Dr. Bimal Kumar Kar**, Professor,
Department of Geography,
Gauhati University,
Guwahati (Assam).

punjab geographer

