



STATUS AND VELOCITY OF URBANIZATION IN ARUNACHAL PRADESH, INDIA: A NEW DIRECTION

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ABSTRACT- Urbanization, as a social transformation, is very sensitive to public policy. The transformation is indeed inevitable, but the form it takes can vary greatly from one place to another. It transforms or enhances as well as modernizes the human societies, and serves as a significant agent in the patterning and organizing the social processes in space. This paper seeks to examine the status and velocity of urbanization in Arunachal Pradesh of India in a new direction. This study is descriptive type of research based on secondary data gathered from government offices, books, articles, websites, web-based journals, Census Reports and government offices. The velocity of urbanization in the State in the later stage is slower than that of earlier stage. It occurs unevenly over space and time and total urbanization within a short span in the State seems difficult because of lack of proper planning.

KEYWORDS: Arunachal Pradesh, Modernize, Planning, Urbanization, Velocity

I. INTRODUCTION

The term 'Urbanization' implies the movement of people to urban areas as Thompson has defined it as "Urbanization is characterized by movement of people from small communities concerned chiefly or solely with agriculture to other communities generally larger whose activities are primarily centered in government trade, manufacture, or allied interests" (Thompson, W.S. (1935). Urbanization is the process whereby land and inhabitants become urban. It refers to a change in both place and people (Smailes, A.E. 1975). The term urbanization is mainly considered as a process of continuous change in the pattern of population distribution. Urbanization may be regarded as the yardstick of measuring the economic prosperity of a region. The degree of urbanization is considered a fair index of the level of socio-economic development of a country, in the words of Hope Tisdale Eldridge, "Urbanization is a process of population concentration and identifies two elements in the process (a) The multiplication of points of concentration and (b) the increase in the size of individual concentration (Hope Tisdale, Eldridge, 1956). Emphasizing the relation of the level of urbanization and economic progress of an area, Hoffman observed that "Although only tenth of India's population is urban, proportionately its influence is much greater, since it includes most Indians with modern political, economic and social abilities, ideas and techniques. For example, about a quarter of the Indian literates and a third of the Indian income are concentrated in the cities and towns (Hoffman, 1948). The definition of the "Urban" is a complex matter and the diversity in the national definition of Urban cannot be eliminated. Even in India, this definition shows the evolution of the definition from Census to Census (Dubey, 1981).

Urbanization as we all know is a socio economic phenomenon. It plays a significant and dynamic role in changing the overall quality of life. It transforms or enhances as well as modernizes the human societies, and serves as a significant agent in the patterning and organizing the social process in *spatio-temporal* context. This is considered to be an essential component of development which every society at one point of time must go through if it is to move from one stage of development to another (Mandal, 2009). Thus, the process of urbanization has many dimensions. The variety of dimensions' ranges from physical spread of land to the social processes by which urbanism inculcates into a population. Between these two extremes, lie such dimensions of the process of urbanizations as: (i) the proportion of population living in urban places; (ii) the

absolute number of urban dwellers; (iii) the growth of the proportion of people living in urban centers; and (iv) the rate of growth of number of people living in urban places (Clarke, 1972, p.49, Chandna, p.385). Therefore, Urbanization is a complex dynamic process of population concentration in urban settlements. In other words, urbanization means increase in the proportion of urban population to total population over a period of time. However, the concept of urbanization is in the stage of evolution throughout the world and more so in developing countries like India (Kaushik, 2003). It is the physical growth of urban areas as a result of rural migration and even suburban concentration into cities, particularly the very large ones¹.

It is a process whereby populations move from rural to urban areas, enabling cities and towns to grow. It can also be termed as a progressive increase in the number of people living in towns and cities. It is highly influenced by the notion that cities and towns have achieved better economic, political, and social mileages compared to rural areas. Accordingly, urbanization is very common in developing and developed worlds as more and more people have the tendency of moving closer to towns and cities to acquire "privileged" social and economic services as well as benefits. These include social and economic advantages such as better education, health care, sanitation, housing, business opportunities, and transportation². Urbanization is one of the common characteristics of economic development. With the gradual growth of the economy, the process of urbanization depends on the shift of surplus population from rural to urban areas along-with the growth of some industrialized urban centres³. Rapid mushrooming of squatter settlements on land pockets may be seen as usual fallout of urbanization. The factors identified for the formation and growth of squatter settlements are poverty, absence and inadequacy of urban planning, migration, economic development of city, shortfall in existing housing stock, political reasons, refugee influx and other miscellaneous spatio-demographic reasons (Asif, and Wali, 2006, p. 48).

Urbanization is a universal phenomenon which is growing at a rapid pace. Today more than half of the world population lives in urban areas and the proportion goes on increasing, as urban centres are considered point of excellence, where ample opportunities of growth and development in every aspect exist (Aksoy, 1969).

THE STUDY AREA

Arunachal Pradesh, the land of rising sun situated in the North Eastern part of India formed on February 20, 1987 is the 13th geographically largest State among all States and Union Territories of India. It has 83,743 km² area covering around 2.5% of the country's total geographical area. The State is predominantly mountainous and like a horseshoe in shape. This State is situated near the tropic of cancer, sprawls between latitudes 26° 30'N and 29°31' N and longitude between 91° 30'E and 97° 30' E (Statistical Abstract of A.P., 2012) on the North East extremity of India, fig. 1. It is bestowed by nature with beautiful ranges of snow-clad Himalayan peak which is locally called as paradise on the earth. The State with a population of 13, 82,611 comprises only 0.11 per cent of the population of India (Census, 2011). The literacy rate is 66.95% as per 2011 Census. The State falls within the Eastern Himalaya, which extends from Bhutan and Southern China to the tri-junction of India, China and Myanmar where the Himalaya makes its dramatic U-turn to form the Patkai Hills. The State has a long international border with Bhutan to the West (160 km), China to the North and North East (1,080 km) and Myanmar to the East (440 km). The geostrategic importance of the State becomes evident from the fact that the State has more than 1,630 km international border. The international border of the State runs from one tri-junction of Tibet (China), Bhutan and India in the North West to another tri-junction of China, Myanmar and India in the North East along with high peaks of the Himalayas. The State has the highest forest cover in the country and boasts over 5000 plant species with over 500 species of orchids alone.

Map of India showing the location of Arunachal Pradesh

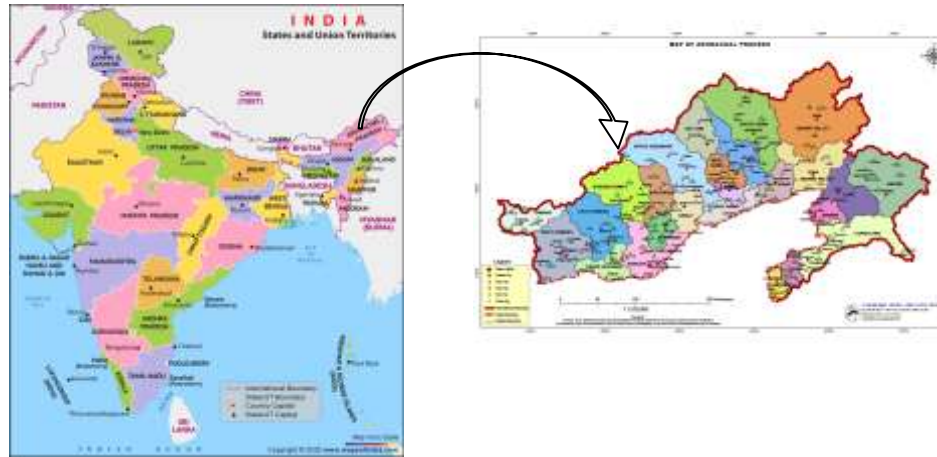


Fig-1

Objective: The prime objective of this paper is to examine the status and velocity of urbanization in Arunachal Pradesh of India in a new direction.

II. METHOD AND MATERIALS

This study is descriptive in nature based basically on data of secondary sources of urbanization. The data from secondary sources are collected from government offices, books, articles, various census reports, websites and web-based journals published in different times. But the primary source of urbanization data is the population census.

Analysis: The different materials collected from the various sources have been scrutinized, processed, organized and tabulated logically and systematically under appropriate heads of rows and columns of statistical tables in such a way to use the different statistical tools for calculation and thereby to get the results. In addition to graphical representations (Line and Bar Diagrams), simple numerical calculations like the decennial growth rate and annual growth rate of the urban population and centres and their percentages have been calculated.

III. RESULTS AND DISCUSSION

Status of Urban Centers and Growth of Urban Population in the State since 1961

The most commonly used measure of urbanization is the proportion of total population of an area that lives in urban centres. However, some demographers and urban analysts use another simple but effective method to judge the urbanization level in an area. Towns act as focal points in providing socio-economic services to its surrounding hinterlands. In fact, the total rural population served by an urban centre indicates its effectiveness with respect to other urban centres. The larger the rural population served, lower is the urbanization level. When no rural population is served, urbanization is total and no further urbanization is possible (Ramachandran, 1996).

1. Status of Urban Centers in 1961: The First Population Census was administered in the State in 1961. In 1961 Census the State had no urban town. The State was entirely rural. There were five districts in the State namely, Kameng District, Subansiri District, Siang District, Lohit District and Tirap District.

2. Status of Urban Centers in 1971: The concept of urbanization is not very old in Arunachal Pradesh. Arunachal Pradesh occupied its place in the map of urban centers of India only in the 1971 census, with the inclusion of its four towns. However, the growth of urban settlements in Arunachal Pradesh appears not to be

the outcome of complex interactions of internal socio-economic and demographic forces of the tribal societies of the state which is generally found elsewhere (Mitra, 1997, p.105).

The Second Population Census was administered in 1971 in the State. In 1971 Census, there were only 5 districts in the State. As per 1971 Census, the State had 4 Census Towns. These were Bomdila, the head quarter of the Kameng District, Aalo and Pasighat in the Siang District, Tezo in the Lohit District declared Census towns as per the definition of urban place on the basis of administrative and population criteria of 1971 Census.

Table-1: District wise Urbanization Status of Arunachal Pradesh, 1971

District	Total Population	Census Town	Urban Population		Category Class of Town
			Total	Percentage	
Kameng	86001	Bomdila	3172	3.69	VI
Subansiri	112928	Nil	0	0	
Siang	108247	Aalo	4967*	4.58	VI
		Pasighat	4967*	4.58	VI
Lohit	62865	Tezo	4182	6.65	VI
Tirap	97470	Nil	0	0	
A.P.	467511		17288	3.70	

Source: Statistical Handbook of Arunachal Pradesh 1971-72, Directorate of Economics and Statistics, Arunachal Pradesh, Administration, Shillong. N.B.: A.P. = Arunachal Pradesh. *The urban population of Siang District was recorded as 9934 in Statistical Handbook of Arunachal Pradesh 1971-72 for two Census towns, Aalo and Pasighat. So, half of the urban population is considered for each Census town, Aalo and Pasighat subject to error.

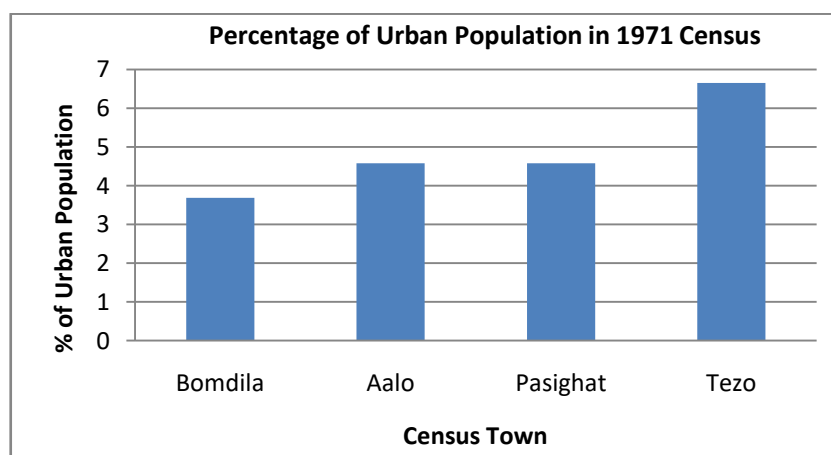


Fig.-2

Table- 2: Category Class of Town in 1971 Census in Arunachal Pradesh

Name of the Census Towns	Category Class of Town	Number
Nil	I	Nil
Nil	II	Nil
Nil	III	Nil
Nil	IV	Nil
Nil	V	Nil
Bomdila, Aalo, Pasighat and Tezo	VI	4
Total		4

Source: Constructed on the basis of Table-1.

Findings of Table-1 & 2 and Fig.-2: As per 1971 Census, the percentage of urban population was very negligible. The proportions of urban population of four Census towns of the corresponding districts were

3.69% at Bomdila Town, 4.58 % at Aalo Town, 4.58% at Pasighat Town and 6.65% at Tezo Town. Overall proportion of urban population in the State was 3.70% in 1971 Census. So, all the Census towns were under VI Class category type as per criteria of 1971 Census. District level analysis of the total rural population served by the urban centres of a particular district shows an overall positive pattern of urbanization level in the state.

3. Status of Urban Centers in 1981: The Third Population Census was administered in 1981 in the State. In 1981 Census, there were only 9 districts in the State. As per 1981 Census, the State had 6 Census Towns. They were Bomdila in the West Kameng District, Naharlagun and Itanagar in the Lower Subansiri District, Aalo in the West Siang District, Pasighat in the East Siang District, and Tezo in the Lohit District declared Census towns as per the definition of urban place on the basis of administrative and population criteria of 1971 Census.

Table-3: District wise Urbanization Status in Arunachal Pradesh, 1981

District	Total Population	Census Town	Urban Population		Category Class of Town
			Total	Percentage	
West Kameng	63302	Bomdila	3860	6.08	VI
East Kameng	42736	0	0	0	
Lower Subansiri	112650	Naharlagun	7058*	6.27	V
		Itanagar	7058*	6.27	V
Upper Subansiri	39410	0	0	0	
West Siang	74164	Aalo	8074	10.89	V
East Siang	70451	Pasighat	9139	12.97	V
Dibang Valley	30978	0	0	0	
Lohit	69498	Tezo	6239	8.98	V
Tirap	128650	0	0	0	
A. P.	631839		41428	6.56	

Source: Statistical Atlas, Arunachal Pradesh 1984, Directorate of Economics and Statistics, Govt. of Arunachal Pradesh, Shillong. N.B.: *The urban population of Lower Subansiri District was recorded as 14116 in Statistical Handbook of Arunachal Pradesh 1971-72 for two Census towns, Aalo and Pasighat. So, half of the urban population is considered for each Census town, Aalo and Pasighat subject to error. A.P.= Arunachal Pradesh

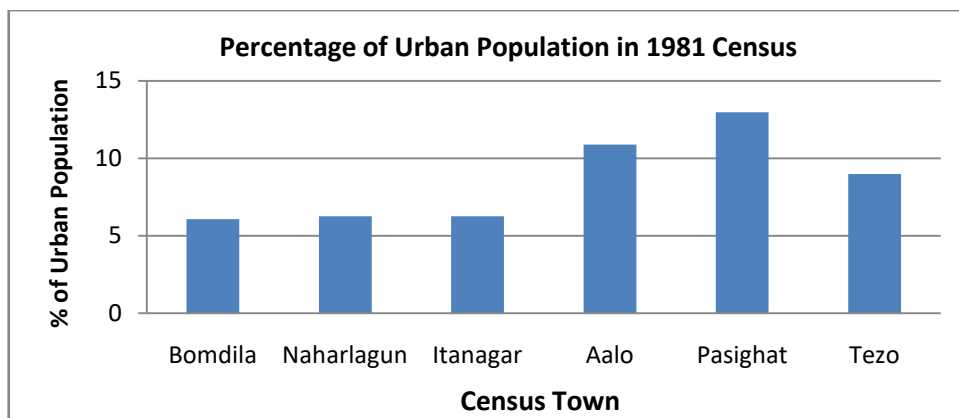


Fig.-3

Table- 4: Category Class of Town in 1981 Census in Arunachal Pradesh

Name of the Census Towns	Category Class of Town	Number
Nil	I	Nil
Nil	II	Nil
Nil	III	Nil
Nil	IV	Nil
Naharlagun, Itanagar, Aalo,	V	5

Pasighat and Tezo		
Bomdila	VI	1
Total		6

Source: Constructed on the basis of Table-3.

Findings of Table-3&4 and Fig-3: As per 1981 Census, the proportions of urban population of Bomdila, Naharlagun, Itanagar, Aalo, Pasighat and Tezo of the corresponding districts were 6.08%, 6.27%, 6.27%, 10.89%, 12.97% and 8.98% respectively. Overall proportion of urban population in the State was 6.56% in 1981 Census. All the Census towns were under V Class category type town except Bomdila as per criteria of 1971 Census. Bomdila was under VI Class category type town.

4. Status of Urban Centers in 1991: The Fourth Population Census was administered in 1991 in the State. In 1991 Census, there were only 13 districts in the State. As per 1991 Census, the State had **10** Census Towns. They were Bomdila in the West Kameng District, Naharlagun & Itanagar in the Papumpare District, Ziro in the Lower Subansiri District, Aalo in the West Siang District, Pasighat in the East Siang District, Roing in the Dibang Valley District and Tezo & Namsai in the Lohit District and Khonsa in the Tirap District declared Census towns as per the definition of urban place on the basis of administrative and population criteria of 1971 Census.

Table-5: District wise Urbanization Status in Arunachal Pradesh, 1991

District	Total Population	Census Town	Urban Population		Category Class of Town
			Total	Percentage	
Tawang	28287	0	0	0	
West Kameng	56421	Bomdila	5655	10.02	V
East Kameng	50395	0	0	0	
Papum Pare	72811	Naharlagun	14369	19.73	IV
		Itanagar	16545	22.72	IV
Lower Subansiri	83167	Ziro	8862	10.66	V
Upper Subansiri	50086	0	0	0	
West Siang	89936	Aalo	13239	14.72	IV
East Siang	71864	Pasighat	14639	20.37	IV
Upper Siang	27779	0	0	0	
Dibang Valley	43068	Roing	6976	16.20	V
		Lohit	109706	Tezo	15271
		Namsai	7975	7.27	V
Changlang	95530	0	0	0	
Tirap	85508	Khonsa	7097	8.30	V
A.P.	864558		110628	12.80	

Source: Statistical Abstract of Arunachal Pradesh 1998, Directorate of Economics and Statistics, Govt. of Arunachal Pradesh, Itanagar. A.P.= Arunachal Pradesh

Table- 6: Category Class of Town in 1991 Census in Arunachal Pradesh

Name of the Census Towns	Category Class of Town	Number
Nil	I	Nil
Nil	II	Nil
Nil	III	Nil
Naharlagun, Itanagar, Aalo, Pasighat and Tezo	IV	5
Bomdila, Ziro, Roing, Namsai and Khonsa	V	5
Nil	VI	
Total		10

Source: Constructed on the basis of Table-5.

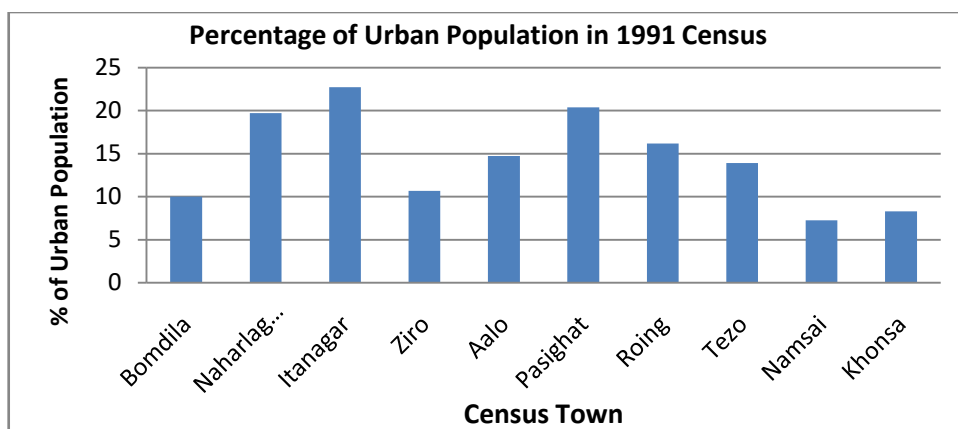


Fig.-4

Findings of Table-5 & 6 and Fig.-4: As per 1991 Census the proportions of urban population of Bomdila, Naharlagun, Itanagar, Ziro, Aalo, Pasighat, Roing, Tezo, Namsai and Khonsa of the corresponding districts were 10.02%, 19.73%, 19.73%, 22.72%, 10.66%, 14.72%, 20.37%, 16.20%, 13.92%, 7.27% and 8.30% respectively. Overall proportion of urban population in the State was 12.80% in 1991 Census. Naharlagun, Itanagar, Aalo, Pasighat and Tezo were of IV Class Category of Census Town while Bomdila, Ziro, Roing, Namsai and Khonsa were of V Class Category of Census Town as per criteria of 1971 Census.

5. Status of Urban Centers in 2001: The Fifth Population Census was administered in 2001 in the State. In 2001 Census, there were 17 Census Towns in the State. They were Tawang in the Tawang District, Bomdila in the West Kameng District, Seppa in the East Kameng District, Naharlagun & Itanagar in the Papumpare District, Ziro in the Lower Subansiri District, Daporijo in the Upper Subansiri District, Aalo & Basar in the West Siang District, Pasighat in the East Siang District, Roing in the Dibang Valley District, Tezo & Namsai in the Lohit District, Changlang & Jairampur in the Changlang District, and Khonsa & Deomali in the Tirap District declared Census towns as per the definition of urban place on the basis of administrative and population criteria of 1971 Census.

Table-7: District wise Urbanization Status in Arunachal Pradesh, 2001

District	Total Population	Census Town	Urban Population		Category Class of Town
			Total	Percentage	
Tawang	38924	Tawang	8376	21.52	V
West Kameng	74599	Bomdila	6693	8.97	V
East Kameng	57179	Seppa	15002	26.24	IV
Papumpare	122003	Itanagar	35022	28.71	III
		Naharlagun	27020	22.15	III
Lower Subansiri	55726	Ziro	12384	22.22	IV
KurungKumey	42518	0	0	0	
Upper Subansiri	55346	Daporijo	15756	28.47	IV
West Siang	103918	Aalo	17033	16.39	IV
		Basar	4079	3.93	VI
East Siang	87397	Pasighat	21965	25.13	III
Upper Siang	33363	0	0	0	
Dibang Valley	57720	Roing	10107	17.51	IV
Lohit	125086	Tezu,	15015	12.00	IV
		Namsai	11747	9.39	IV
Anjaw	18441	0	0	0	
Changlang	125422	Changlang	6469	5.16	V
		Jairampur	5919	4.72	V
Tirap	100326	Khonsa	9233	9.20	V

		Deomali	6061	6.04	V
A.P.	1097968		227881	20.75	

Source: Statistical Abstract of Arunachal Pradesh, 2008 and 2017, Directorate of Economics and Statistics, Govt. of Arunachal Pradesh, Itanagar.

Table- 8: Category Class of Town in 2001 Census in Arunachal Pradesh

Name of the Census Towns	Category Class of Town	Number
Nil	I	Nil
Nil	II	Nil
Itanagar, Naharlagun and Pasighat	III	3
Seppa, Ziro, Daporijo, Aalo, Roing, Tezu, and Namsai	IV	7
Tawang, Bomdila, Changlang, Jairampur, Khonsa and Deomali	V	6
Basar	VI	1
Total		17

Source: Constructed on the basis of Table-7.

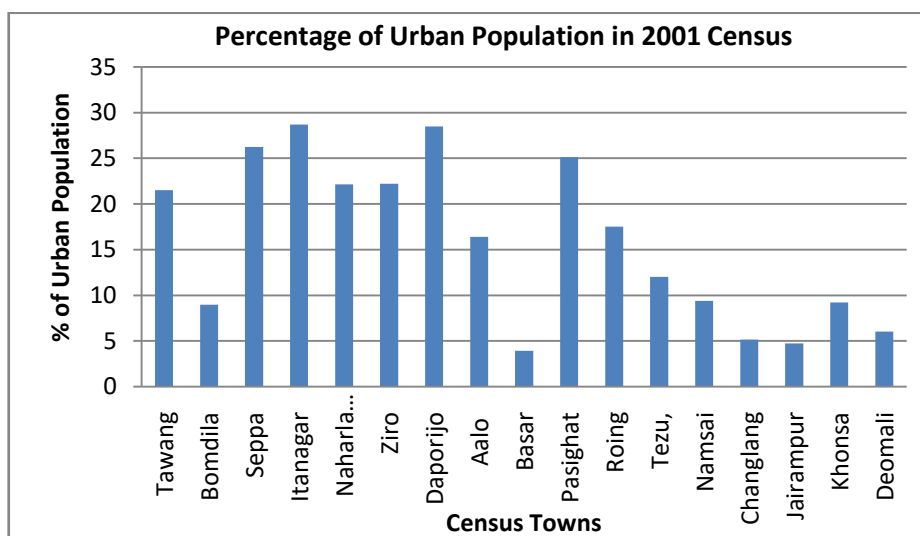


Fig.-5

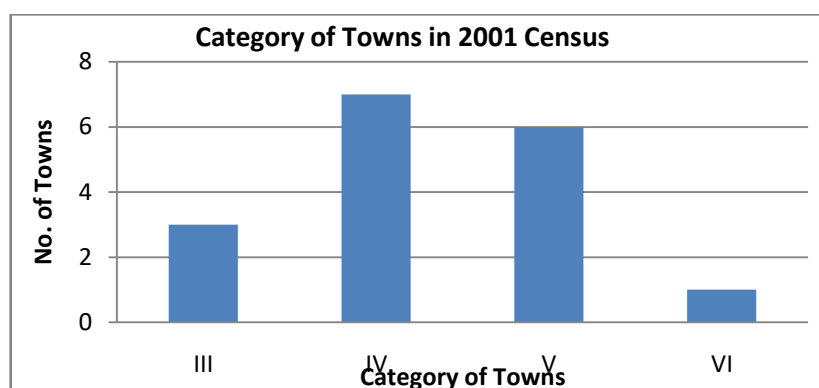


Fig.-6

Findings of Table-7 & 8 and Fig.-5&6: As per 2001 Census, the proportions of urban population of Tawang, Bomdila, Seppa, Itanagar, Naharlagun, Ziro, Daporijo, Aalo, Basar, Pasighat, Roing, Tezo, Namsai, Changlang, Jairampur, Khonsa and Deomali of the corresponding districts were 21.52%, 8.97%, 26.24%, 28.71%,

22.15%, 22.22%, 28.47%, 16.39%, 3.93%, 25.13%, 17.51%, 12.00%, 9.39%, 5.16%, 4.72%, 9.20%, and 6.04% respectively. Overall proportion of urban population in the State was 20.75% in 2001 Census. Among these Census Towns, Itanagar, Naharlagun and Pasighat were III Category Class of Town, Seppa, Ziro, Daporijo, Aalo, Roing, Tezu, and Namsai were IV Category Class of Town, Tawang, Bomdila, Changlang, Jairampur, Khonsa and Deomali were V Category Class of Town, and Basar was VI Category Class of Town declared Census towns as per the definition of urban place on the basis of administrative and population criteria of 1971 Census.

6. Status of Urban Centers in 2011: The Sixth Population Census was administered in 2001 in the State. In 2001 Census, there were 27 Census Towns in the State. They were Tawang in the Tawang District, Bomdila, Dirang&Rupa in the West Kameng District, Seppa in the East Kameng District, Itanagar, Naharlagun&Sagalee in the Papumpare District, Ziro in the Lower Subansiri District, Koloriang in the KurungKumey District, Daporijo in the Upper Subansiri District, Aalo&Basar in the West Siang District, Boleng&Pasighat in the East Siang District, Yingkiong in the Upper Siang District, Anini in the Dibang Valley District, Roing in the Lower Dibang Valley District, Tezo&Namsai in the Lohit District, Hawaii in the Anjaw District, Changlang, Jairampur& Miao in the Changlang District, and Deomali, Khonsa&Longding in the Tirap District declared Census towns as per the definition of urban place on the basis of administrative and population criteria of 1971 Census.

Table-9: Urbanization Status in Arunachal Pradesh, 2011

District	Population	Census Town	Urban Population		Town Class
			Total	Percentage	
Tawang	49977	Tawang	11202	22.41	IV
West Kameng	83947	Bomdila	8370	9.97	V
		Dirang	3750	4.47	VI
		Rupa	3812	4.54	VI
East Kameng	78690	Seppa	18350	23.32	IV
Papumpare	176573	Itanagar	59490	33.69	II
		Naharlagun	36158	20.48	III
		Sagalee	1315	0.74	VI
Lower Subansiri	83030	Ziro	12806	15.42	IV
KurungKumey	92076	Koloriang	2345	2.55	VI
Upper Subansiri	83448	Daporijo	13405	16.06	IV
West Siang	112274	Aalo	20684	18.42	III
	0	Basar	4284	3.86	VI
East Siang	99214	Boleng	2979	3.00	VI
		Pasighat	24656	24.85	III
Upper Siang	35320	Yingkiong	6540	18.52	V
Dibang Valley	8004	Anini	2384	29.79	VI
Lower Dibang Valley	54080	Roing	11389	21.06	IV
Lohit	145726	Tezu	18184	12.48	IV
		Namsai	14246	9.78	IV
Anjaw	21167	Hawai	982	4.64	VI
Changlang	148226	Changlang	6236	4.21	V
		Jairampur	7151	4.82	V
		Miao	5841	3.94	V
Tirap	111975	Deomali	6648	5.94	V
		Khonsa	9928	8.87	V
		Longding	4234	3.78	VI
A P	1383727		317369	22.94	

Source: Statistical Abstract-2017, Directorate of Economics and Statistics, Govt. of Arunachal Pradesh, Itanagar.

Table- 10: Category Class of Town in 2011 Census in Arunachal Pradesh

Name of the Census Towns	Category Class of Town	Number
Nil	I	Nil
Itanagar	II	1
Naharlagun, Aalo and Pasighat	III	3
Tawang, Seppa, Ziro, Daporijo, Roing, Tezu, and Namsai	IV	7
Bomdila, Yingkiong, Changlang, Jairampur, Miao, Deomali and Khonsa	V	7
Dirang, Rupa, Sagalee, Koloriang, Basar, Boleng, Anini, Hawaii and Longding	VI	9
Total		27

Source: Constructed on the basis of Table-5.

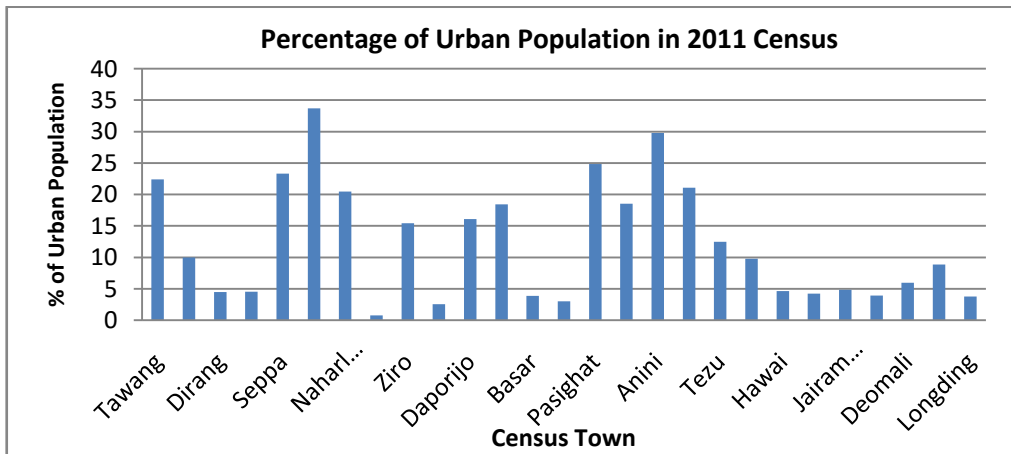


Fig.-7

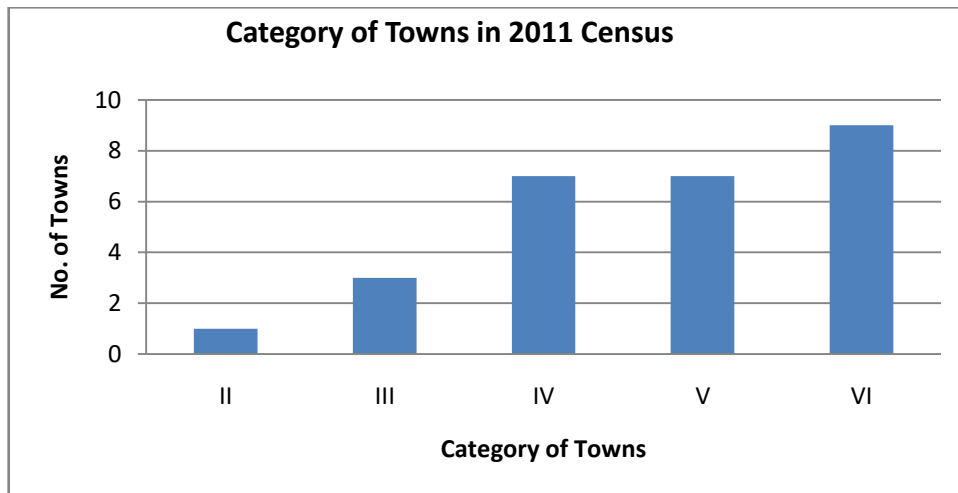


Fig.-8

Findings of Table-9 & 10 and Fig. 7&8: As per 2011 Census, the proportions of urban population of Tawang, Bomdila, Dirang, Rupa, Seppa, Itanagar, Naharlagun, Sagalee, Ziro, Koloriang, Daporijo, Aalo, Basar, Boleng, Pasighat, Yingkiong, Anini, Roing, Tezo, Namsai, Hawaii, Changlang, Jairampur, Miao, Deomali, Khonsa and Longding of the corresponding districts were 22.41%, 9.97%, 4.47%, 4.54%, 23.32%, 33.69%, 20.48%, 0.74%, 15.42%, 2.55%, 16.06%, 18.42%, 3.86%, 3.00%, 24.85%, 18.52%, 29.79%, 21.06%, 12.48%, 9.78%, 4.64%, 4.21%, 4.82%, 3.94%, 5.94%, 8.87% and 3.78% respectively. Overall proportion of urban

population in the State was 22.94% in 2011 Census. Among these Census Towns, Itanagar was II Category Class of Town. Naharlagun, Aalo and Pasighat were III Category Class of Town. Tawang, Seppa, Ziro, Daporijo, Roing, Tezu, and Namsai were IV Category Class of Town. Bomdila, Yingkiang, Changlang, Jairampur, Miao, Deomali and Khonsa were V Category Class of Town. Dirang, Rupa, Sagalee, Koloriang, Basar, Boleng, Anini, Hawaii and Longding were VI Category Class of Town declared Census towns as per the definition of urban place on the basis of administrative and population criteria of 1971 Census.

Velocity of Urbanization

The process of urbanization can be measured in terms of four demographic dimensions: (i) The degree of Urbanization, (ii) The tempo of Urbanization, (iii) The concentration and dispersion of population, and (iv) The components of urban growth. Again, the most important measures of Urbanization are: (a) Percentage of population in urban areas, (b) Ratio of Urban - Rural Population, (c) Size of locality of residences of the medium inhabitants, and (d) Tempo of Urbanization (Pandey, N 1985). Urbanization, urban growth, urban sprawl and urban expansion are different concepts that have caused much confusion in the analysis of multidimensional urban systems. There is no specific definition of urban expansion—this concept is commonly used to describe urban population, physical expansion, quality of urban layout, land and housing regulation and so on (Angel, *et al*, 2005). In most of real world situations, these terms cannot be clearly separated, since urbanization, urban growth, urban sprawl and urban expansion are highly interlinked. Therefore, the widely accepted and commonly used parameter for measuring urbanization is urbanization velocity. Urbanization velocity (also called urban expansion speed) is defined as the annual growth rate of urban area within a period (Chunzhu Wei, *et al*, 2017, p.2). Compared to the experience of the more developed regions, the speed of urbanization has been higher in some less developed regions since 1950, except for Northern Africa and South-Central Asia. The level and speed of urbanization, as well as the underlying demographic drivers are closely linked with economic transformation as well as with spatial planning, including housing, infrastructure and service delivery (United Nations, 2018). Therefore, urbanization velocity is defined as the annual growth rate of urban area within a period. It indicates the absolute differences (in terms of footprints) of urban areas within a certain time period. Here we consider the annual growth rate of urban centres in the State as the velocity of urbanization⁴.

Table-11: Growth of Urban Population in Arunachal Pradesh since 1971

Census Year	Total Urban Population	Census Year	Decennial Growth of Urban Population	Percentage of Decennial Urban Population Growth	Percentage of Annual Urban Population Growth
1971	17288	-	-	0	0
1981	41428	1971-1981	24140	139.6344	13.96
1991	104973	1981-1991	63545	153.3866	15.33
2001	227881	1991-2001	122908	117.0853	11.71
2011	317369	2001-2011	89488	39.26962	3.93

Source: Statistical Abstract-2017, Directorate of Economics and Statistics, Govt. of Arunachal Pradesh, Itanagar. Calculation based on Census Data, 1961-2011.

N.B.: (i) Decennial Urban Population Growth = Urban Population of Current Census - Urban Population of Previous Census

(ii) Percentage of Urban Population Growth = (Decennial Urban Population Growth ÷ Urban Population of Previous Census) × 100

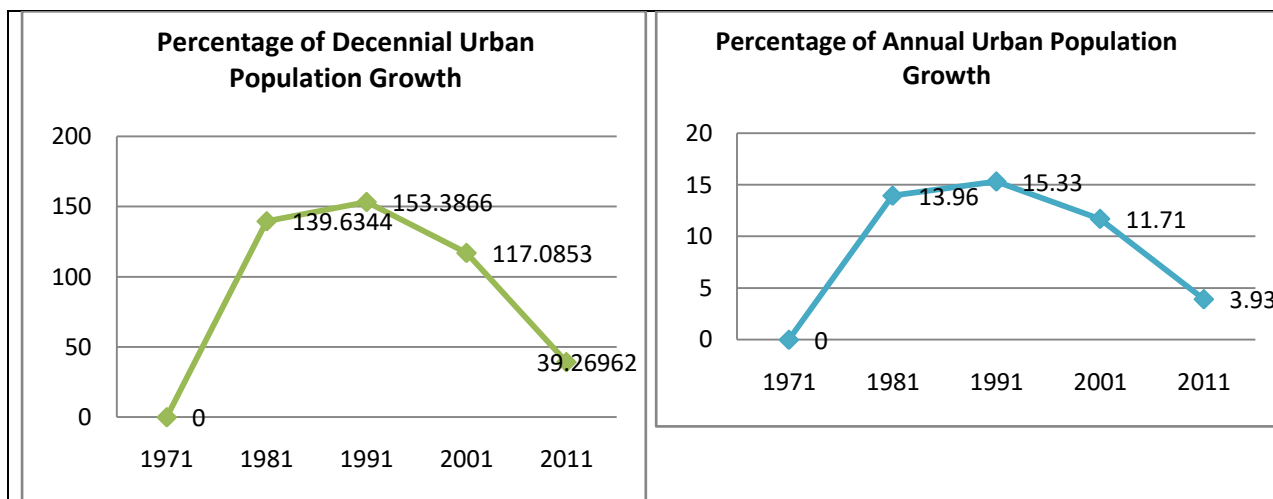


Fig.-9

Fig.-10

Findings of Table-11 and Fig. 9&10: In the first Census 1961, there was no urban centre. The urban centres came in 1971 when total urban population was 17288 persons. So the decennial growth was zero in 1971 Census. Now Percentage of Decennial Urban Population Growth was 139.6344% in 1981, 153.3866% in 1991, 117.0853% in 2001 and 39.26962% in 2011. Fig-9 shows the time plot of the Percentage of Decennial Urban Population Growth and Fig-10 shows the time plot of Percentage of Annual Urban Population Growth. The time plot curve of the Percentage of Decennial Urban Population Growth was initially increasing very sharply up to 1991 Census and from 1991 Census it started decreasing. We get the same picture in case of the time plot curve of the Percentage of Annual Urban Population Growth.

Table-12: Velocity of Urbanizations since 1971 Census

Year	Total Number of Census Towns	Census Year	Decennial Growth of Urban Centres	Annual Growth of Urban Centres	Velocity of Urbanization
1971	4	-	-	-	0
1981	6	1971-1981	2	0.2	5.0
1991	10	1981-1991	4	0.4	6.66
2001	17	1991-2001	7	0.7	7.0
2011	27	2001-2011	10	1.0	5.88

Source: Statistical Abstract-2017, Directorate of Economics and Statistics, Govt. of Arunachal Pradesh, Itanagar. Calculation based on Census Data, 1961-2011.

N.B.: We assume here Percentage of Annual Growth of Urban Centres as Velocity of Urbanization since 1971 Census.

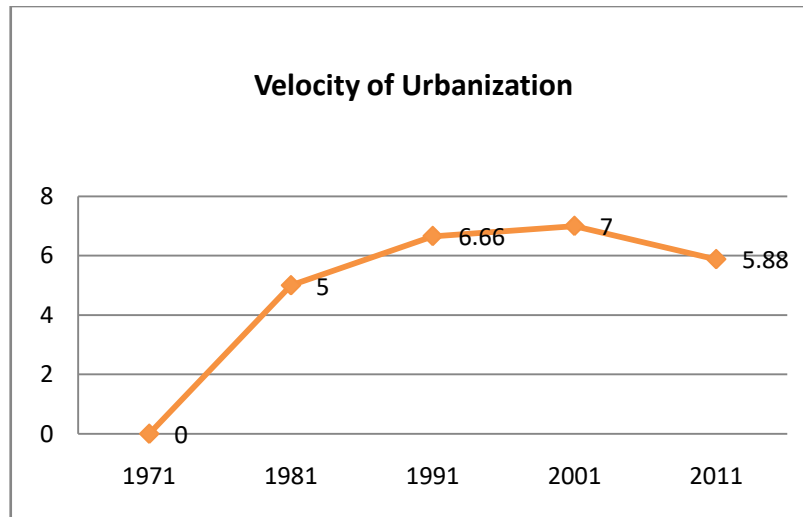


Fig-11

Findings of Table-12 and Fig-11: Decennial Growth of Urban Centers was 2 in 1981 Census, 4 in 1991 Census, 7 in 2001 Census and 10 in 2011 Census. Percentage of Growth of Decennial Urban Centres Growth i.e., Velocity of Urbanization since 1971 Census 5.0% in 1981 Census, 6.66% in Census, 7.0% in 2001 Census and 5.88% in 2011 Census. The Fig-10 shows the time plot of Percentage of Annual Growth of Decennial Urban Centres, i.e., Velocity of Urbanization Curve increases very sharply, but it is up to 2001 Census and then it declines in 2011. Therefore, we conclude that the number of urban centres is increasing very fast but in comparison to that, the urban population was not increasing in the State.

IV. FINDINGS

1. The present condition of urbanization in the State creates a large number of towns for middle and lower categories. These towns have qualified the urban status because of their population size only without necessary basic infrastructures. Thus, the number of urban centres is increasing since 1971.
2. The velocity of urbanization in the State in the later stage is slower than that of earlier stage. It occurs unevenly over space and time and total urbanization within a short span in the State is very difficult because of lack of proper planning.
3. Again the velocity of urbanization depends upon the topographic features and distribution and density of population. The topographic features of Itanagar and Naharlagun (twin city of Papum Pare District) is more or less acceptable, where near about 51% people of the district are living. The main reason for high concentration of urban population at Itanagar and Naharlagun is its functional character in terms of administrative, political, economic, cultural, education, business, medical facility, and transportation and trade and commerce hub. Thus, Itanagar and Naharlagun have emerged and re-emerged in new form, shape and with different shades of development.
4. The velocity of urbanization of Naharlagun and Itanagar will be highest because of demand for labour force in different sectors if it is calculated urban centre wise. Industrialization is under process in both the towns. Industrialization, higher standard of living, better employment opportunities, better educational facilities, social mobility and variety and quality of services have accelerated the velocity of urbanization. People are shifting from backward rural areas of the different places of the State to advanced urban areas like Itanagar and Naharlagun.

V. SUGGESTION

Proper urban planning should be formulated consisting of operational, developmental and restorative planning and implemented properly so that environmental damage and population should be minimized.

Operational planning should take care of improvement of urban infrastructure, e.g. roads, traffic, transport etc. Developmental planning should emphasize on development of newly annexed urban areas. The restorative planning promotes a resident's ability to adapt and adjust to living as independently as possible.

In general, urban planning must aim at the components like (a) balanced regional and urban planning (Mukherji, 2001), (b) development of strong economic base for urban economy (c) integration of rural and urban sectors (Kundu, Sarangi and Dash, 2003).

VI. CONCLUSION

There is need of broad based policy to urbanize the poor State like Arunachal Pradesh in the interest of its overall economic development and protection of its rich bio-diversity. Moreover, there are no statutory bodies in urban areas that can look after the development of towns. The urbanization in Arunachal Pradesh is going on in the way of unplanned growth of buildings, residential houses and complexes, commercial buildings etc. Thus, the impact of urbanization is destructing the scope of social forestry and leading to ribbon development in all urban areas of the State especially in the capital complex. The unplanned construction is leading towards landslides, soil erosion, water logging especially during rainy season and loss of fertility of nearby agrarian land. Again, it is creating sewage problems and traffic congestion.

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