

# URBAN EXPANSION OF MYSORE SRIRANGAPATANA REGION, KARNATAKA, INDIA

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**Abstract:** Urbanization usually expands in two ways: The point of multiplication of concentration and increase in the size of Population concentration. Urbanization can take place either in radial direction around an established city or linearly along the Transportation network. This kind of dispersed development along highways, or surrounding the city and in rural areas often leads to the urban outgrowth, or in other words, a sprawl. Uncontrolled population growth coupled with unplanned developmental activities in the areas have led to lot of urban issues.

All these above mentioned factors determine the pressure in land and its associated influences which in turn also determines the spatial expansion of the urban area. The process of urban development and spatial expansion of urban areas are an ever continuing process. So in this context the demand for a balanced urban land use planning and management is very much essential for future needs. It is with this background the current paper tries to study and understand the urban expansion of Mysore Srirangapatna region and examine the population growth over three decades (1981, 1991, 2001 and 2011).

## I. INTRODUCTION

Urbanization is evidently one of the greatest phenomena and a cause for Universal changes across the world. It is not only a topic of serious debate but also an unstoppable process. Nevertheless, one in ten city-dwellers of the world lives in India today. India's urban population is already enormous. The agglomeration process makes it potentially even bigger with 38% of India's population living in continuously built-up settlements with more than 10,000 inhabitants (Denis & Marius, 2011). According to United Nation Population study the current status of the World's population about 55 % lives in urban areas and it is expected to increase to 68% by 2050. The developing countries, are still in a more precarious condition of transition level, they are more populated than the developed countries where the transformation is complete since the past two to three decades. Today most of the city dwellers are found in less wealthy nations. While the maximum attractions towards urbanization in the twenty first century may be broadly envisaged. This raises questions about the future urban expansion of Indian developed and developing cities, especially its large metropolises after the next decades of potentially very high urban growth

Urbanization is an index of transformation from traditional rural economies to modern industrial ones. It is the process by which cities are formed and finally become a part of more people started living and working in central core areas. Unplanned city growth is an indicator of rapid industrialization, which usually reduces the quality of environmental health of a region - sometimes disastrously. Urban expansion and urban growth are the two ways by which urbanization takes place. It happens through progressive concentration of population in an urban unit (Davis, 1965). The increase in Population is the rise in number of people inhabiting in a given area over a given period of time, Whereas Urban growth is a process of population concentration in a specific area.

## II. STUDY AREA

Mysore city was the capital of the former princely state of Mysore. Mysore city being the headquarters of Mysore district is situated in the southern most direction of Karnataka State and it is located in the south-western direction from Bangalore at a distance of 139 Kms and is well connected by rail and road. It covers an area of 128.42 Sq. Km. having City Municipal Corporation since 1977. The population of Mysore is 12, 92883 whereas the city population is 9.83 lakhs. As per Census 2011, Mysore is an Urban Agglomeration coming under category of Class I UAs/Towns. Mysore city is governed by Municipal Corporation and is situated in Mysore Urban Region. The district is bounded by north latitudes 11°45' – 12°40' and east longitudes 75°59' -77°05' covering an area of 6269 Sq. km. It is the second single largest city in Karnataka and also it is the second cleanest city in India as per 2010 survey.

Srirangapatana is a town in Mandya district of Karnataka. Located near the city of Mysore, with a distance of 15km and it is of religious, cultural and historic importance. Srirangapatana is located at 120 41'North 76 07'East Longitudes. It has an average elevation of 679 meters (2227 feet) with a population of 1, 80,006 as per 2011 census. This town has greater impact on its growth as the Mysore city grew. The impact of Mysore on Srirangapatana is pertinent rather than Mandya even though it comes under to Mandya district administrative jurisdiction. Few villages located adjacent to Mysore city boundary has been notified by MUDA for future plan of greater Mysore. The region consists of one city (Mysore) and other town (Srirangapatana), with an area of 843.841 km<sup>2</sup>. The figure 1 shows the Study area location of Mysore Srirangapatana region where the region is delineated based on the urban spatial extent from the CBD of Mysore with a buffer of 15km, and also the region includes major portion of Mysore and Srirangapatana taluk.

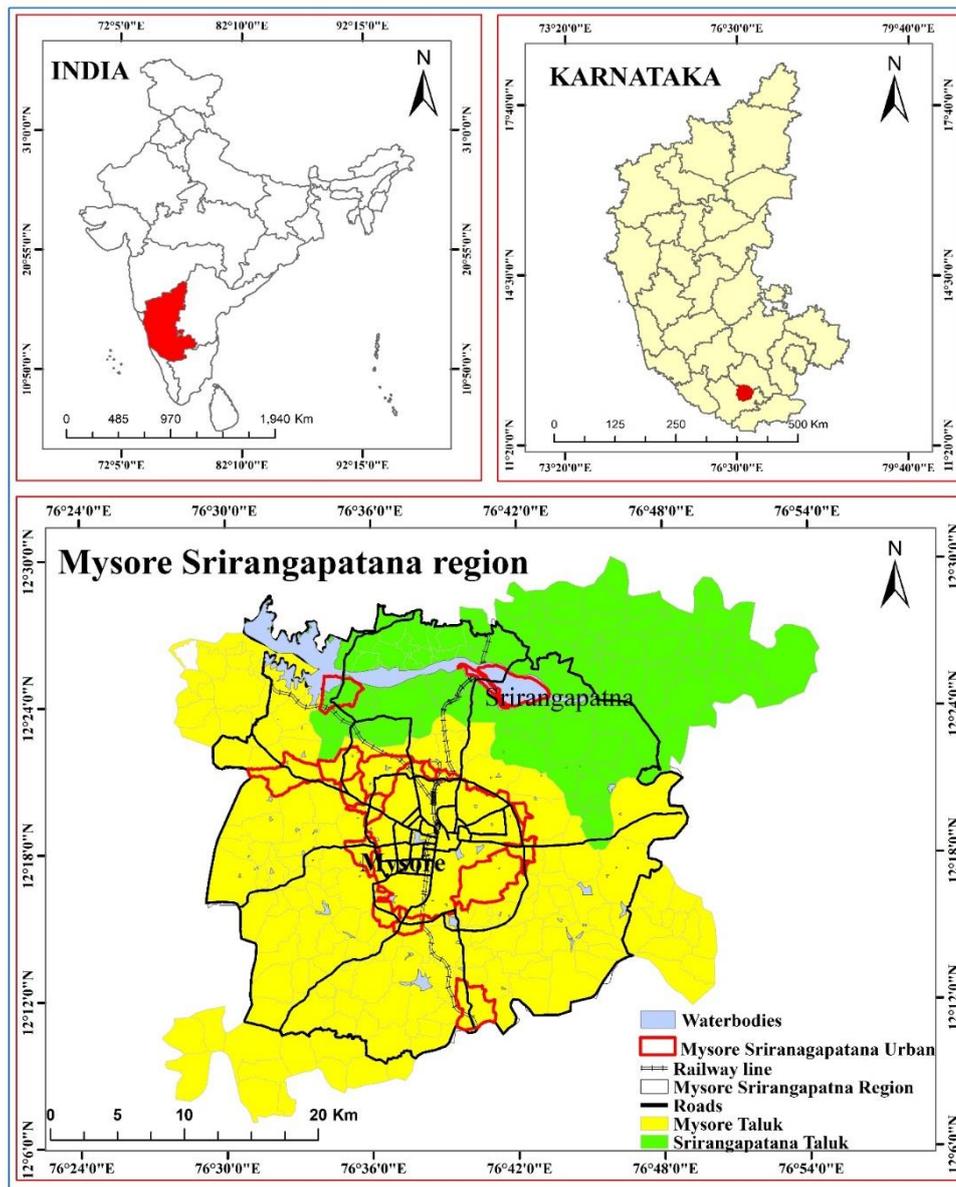


Figure 1. The Study Area: Mysore-Srirangapatana Region

### III. METHODOLOGY

**Data:** The major portion of data related to Population is collected from Decadal Population Enumeration Reports published by the Census of India.

**Data Preparation:** Census data of population are prepared for 1981,1991,2001,2011

**Analysis:** Urban Expansion in Mysore Srirangapatana Region for three decades in three stages. (1981-2011).

### IV. AN OVERVIEW OF MYSORE AND SRIRANGAPATANA REGION

The urban agglomeration process of Mysore Srirangapatana Region has led to the reduction in the total number of villages ever since during 1981 – 2011, from 190 to 179 respectively. Mysore (Class I) and Srirangapatana (Class III) are separated by a distance of 15 km. The intense influence of urbanization over Srirangapatana is largely due to two factors, namely, the proximity to Mysore and the magnitude of urban functions concentrated in the Mysore Srirangapatana Region urban area.

Demographic change is another major driving force for urban expansion as more land is demanded by increasing population. Rapid population increase is one of the major indicators of urban expansion and city growth. The expansion and growth of Mysore Srirangapatana region has been analysed in three stages as shown in Figure 2 by considering the extension of 5 km radius for every decade of the study, based on the limits of the outgrowth villages of Mysore city. To identify the Urban Expansion of Mysore Srirangapatana region, population and area of urban and out growth villages were taken to account for analysis. The urban expansion from 1981 to 2011 have been examined in different stages as follows.

1. Stage 1 Expansion in Earlier stage (1981-1991)
2. Stage 2 Expansion in Middle stage (1991-2001)
3. Stage 3 Expansion in Latest stage (2001-2011)

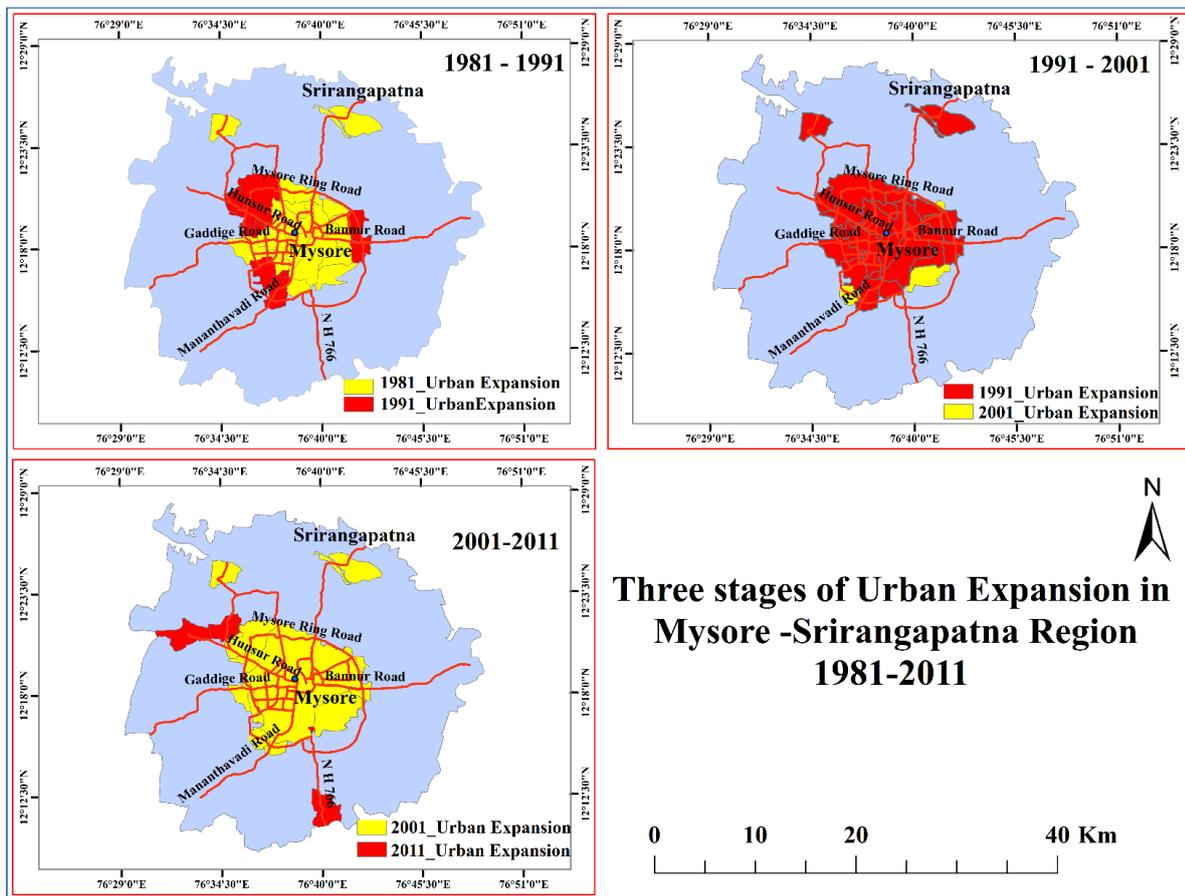


Figure 2: Urban Expansion of Mysore Srirangapatana Region

**4.1 Stage 1: Early Expansion of Mysore Srirangapatana Region 1981-1991:**

The extent of Mysore urban in 1981 was up to 5 km as shown in Figure 2 from the CBD of Mysore city. Out of the 190 villages (Table 1), which lay within 15 km radius, only 13 villages fall within the 5-km buffer, of which 9 are outgrowth villages. For any spatial expansion / growth of cities, the main influencing factor is population. As the population increases, the pressure on the residential area of urban centres increases, resulting in spatial growth of Urban area. The main reason for the population increase is the natural growth of population as well as rural to urban migration taking place, parallel to the natural growth of population. A significant reason for extension of urban built-up areas is rapid population growth, industrial expansion and development of commercial activities that have been experienced in many developing areas. Mysore is not an exception whereas in Srirangapatana this kind of transformation has not been noticed, even though the population has been growing gradually. Both Mysore and Srirangapatana have a rich historical and cultural heritage. But Mysore now happens to be a fast growing city of Karnataka, second largest in the state after Bengaluru. It typically has grown outward while accommodating its growing population and this has led to acceleration of its fringe areas, which have slowly been included in the urban area of Mysore City Conurbation.

In earlier time, urban growth was a local phenomenon and Mysore urban region grew around the palace and its surroundings, extending hardly about a kilometre outward. The area under urban land uses was expanding drastically to serve the urban land demand of the growing population. The spatial expansion of urban was thus growing continuously growing thereby agglomerating the surrounding villages, over the decades.

**Table 1 Change in Population and Urban Expansion between 1981-1991**

Year	Population of Mysore Srirangapatana Region		Total Population	Change in % of Population		Overall change in Population %	Area in km <sup>2</sup>		Total Area	Change in % of Area		Overall change in Area %
	Mysore	SRP		Mysore	SRP		Mysore	SRP		Mysore	SRP	
1981	4,79,081	24,384	5,03,465	-	-	33.9	79.35	17.75	97.1	-	-	35.64
1991	6,44,387	29,786	6,74,173	34.5	22.15		115.73	15.98	131.71	45.84	-9.97	

Mysore city was 19.20 km<sup>2</sup> in 1901; it rapidly increased to 155.73 km<sup>2</sup> in 2011. The Mysore Urban Development Authority (MUDA) was established in the year 1981 and the city was classified into two urban areas, that is, Mysore City Corporation Area and Mysore Urban Development Authority Area. At present Mysore city is 112.81 km<sup>2</sup> under the Municipal Corporation and 155.73 km<sup>2</sup> under Urban Agglomeration (MC + OG). Mysore city suburban area has marginally increased from 1901 to 2011 due to natural increase of population as well as migration to the city. The ultimate effect of rapid population growth is that it resulted in very fast spatial expansion of the city.

It is clear from table 1 that the population of Mysore has increased from 4,79,081 in 1981 to 644,387 in 1991 with a growth rate of 34.5 % of population. The area of Mysore also increased from 97.1 Km<sup>2</sup> to 131.71 Km<sup>2</sup>. In 1981, with a growth rate of 45.84%, the City Improvement Trust Board was converted into Mysore Urban Development Authority, considering the area of urban agglomeration, and it includes both the municipal area and the area under the out-growths. Srirangapatana urban area decreased from 17.75 Km<sup>2</sup> in 1981 to 15.98Km<sup>2</sup> in 1991, and the population had increased from 24,384 to 29,786 with growth rate of 22.15%. Mysore had 12 outgrowths as shown in (Table 2), namely, Belvata, Bhogadi, Chamundibetta, Devanur, Irangere, Kukarhalli, Kurubarahalli, Kythamaranahalli, Malalavadi, Maragowdanahalli, Metagalli, Mysore, and Nachanahalli. There were no outgrowths for Srirangapatna and Hongahalli is the only urban area during this period. These urban areas of Mysore Srirangapatana region in 1981 covers a total area of 97.1 km<sup>2</sup> with a population of 503465 persons and in 1991 increased to total area of 131.71 km<sup>2</sup> with a population of 674,173.

**Table 2 Population and Area of Outgrowth Villages**

Sl. No	Name of the village	Area in Sq. Km				Population			
		1981	1991	2001	2011	1981	1991	2001	2011
1	Alanahalli	-	2.93	2.89	0.00	-	2,360	3,682	0
2	Belvata	3.12	4.72	0.95	1.99	840	13,530	5,707	8,605
3	Bhogadi	7.06	7.85	3.85	4.73	4,675	10,216	4,815	9,041
4	Chamundibetta	5.57	0.32	13.07	0.00	1,001	0.00	1,393	2878.00
5	Chikkaharadanahalli	-	0.78	0	0.00	-	0	0	0
6	Dattagalli	-	5.09	0.20	0.00	-	169	188	0
7	Devanur	3.14	3.51	0	0.00	30	6,669	0	0
8	Elwala	-	-	-	8.93	-	13,701	-	9,826
8	Hebbalu	-	12.01	8.19	-	-	8,658	1,527	-
9	Hinkal	-	7.55	3.24	5.16	-	6,919	12,132	23,162
10	Hutagalli	-	3.44	3.48	3.44	-	2,359	6,554	18,308
11	Kadakola	-	-	-	7.80	-	-	0	6,436
12	Koorgalli	-	-	-	6.89	-	-	0	7,065
11	Iranagere	6.42	0.25	0.00	0.00	1,788	2,184	0	0
12	Kukkarahalli	11.46	0.02	0.00	0.00	515	0	0	0
13	Kurubarahalli	4.25	0.93	0.26	0.00	5,074	10,853	0	0
14	Kyathamranahalli	2.34	5.82	0.00	0.00	4,125	29,871	0	0
15	Lingambudi	-	-	2.91	0.00	-	-	698	0
15	Malalavadi	2.93	3.38	0.00	0.00	3,383	30,653	0	0
16	Maragowdanahalli	2.31	1.54	0.00	0.00	3,794	2,540	0	0
17	Metagalli	3.82	3.3	0.92	0.00	2,132	6,259	508	0
18	Mysore	23.82	36.69	83.55	112.81	450,268	480,692	755,379	920,550

19	Nachanahalli	3.11	3.78	0	0.00	1,456	7,240	0	0
20	Sathagalli	-	3.13	1.12	0.00	-	521	600	0
21	Srirampura	-	5.85	2.78	3.77	-	4,722	6,085	11,234
22	Vijayasripura	-	1.62	0	0.00	-	0	0	0
23	Yeraganahalli	-	1.22	0	0.00	-	4,271	0	0
	Total	79.35	115.73	127.41	155.52	479,081	644,387	799,228	101,7105
24	Srirangapatna	11.62	11.62	11.62	11.62	18137	21905	23729	25,061
25	Hongahalli	6.13	4.36	4.36	6.13	6247	7881	8493	9,074
	Total	17.75	15.98	15.98	17.75	24,384	29,786	32,222	34,135
	Grand Total	97.1	131.71	143.39	173.27	503465	674,173	8,31,450	10,51,240

Table 2 shows list of out growths with area and population during the first stage of expansion. In the year 1981, Mysore city had 12 outgrowth villages. In which Maragowdanahalli village added the least areal extent of (2.31 km<sup>2</sup>) and Kukkarahalli village added the largest of 11.46 km<sup>2</sup> for the expansion of Mysore urban. Similarly, in the year 1991, 10 villages had emerged as outgrowth, raising total outgrowth villages to 22 in Mysore Srirangapatna region. Also 36.68 km<sup>2</sup> of area was added to Mysore with an urban expansion growth rate of 45.84 %. The largest area of 12.01 km<sup>2</sup> was added to the outgrowth from Hebbalu village and the least of 0.02 km<sup>2</sup> from Kukkarahalli in 1991. Srirangapatana urban witnessed with an increase in population from 18137 to 21905, but the area of Hongahalli decreased from 6.13 Km<sup>2</sup> to 4.36 km<sup>2</sup> with an increase in population from 6247 to 7881 persons, Overall the total area of expansion in Mysore Srirangapatna Region increased from 97.1 sq.km to 131.71 sq.km during 1981-1991, and the Population also tremendously raised to 644387 persons in 1991 from 503465 persons in 1981. The highest of 13,701 populations. added to the outgrowth in 1991 is from Devanur and the least population of 169 from Chikkaharadhanahalli. The population of Chamundibetta, Kukkarahalli and Vijayasripura were recorded as zero. Overall the entire region (Table 1) during 1981-1991 witnessed 33.9% of population growth rate and 35.64% of urban expansion.

#### 4.2 Stage 2 or Middle Stage Urban Expansion during 1991-2001

The middle stage of expansion as presented in the Figure 2 of Mysore urban was extended up to 10 km from the CBD of Mysore city based on the extension of outgrowth. In this decade, from 1991 to 2001, the total population of Mysore Srirangapatna region witnessed a growth rate of 23.32 %. The limit of outgrowth was restricted based on the location and extension of the outgrowth. The villages Hebbalu and Hutagalli in the West of Mysore, Lingambudi and Srirampura in the South, Alanahalli and Sathagalli in the East stretched up to 10 km. 56 villages including outgrowth villages lay in the second buffer and remaining 124 villages including Srirangapatana lay beyond 10 km buffer (Table 3).

**Table 3 Change in Population and Urban Expansion between 1981-1991**

Year	Population of Mysore Srirangapatna Region		Total Population	Change in % of Population		Overall change in Population %	Area in km <sup>2</sup>		Total Area	Change in % of Area		Overall change in Area %
	Mysore	SRP		Mysore	SRP		Mysore	SRP		Mysore	SRP	
1991	6,44,387	29786	6,74,173	-	-	23.32	115.73	15.98	131.71	-	-	8.86
2001	7,99,228	32222	8,31,450	24.02	8.17		127.41	15.98	143.39	10.09	-	

In this decade of 1991 to 2001, 12 outgrowths from 1991 Census were incorporated to the Mysore city Corporation from various parts of the city. The area (Table 3) under the Mysore city was 115.73 km<sup>2</sup> in 1991 and expanded to 127.41 km<sup>2</sup> in 2001 adding an area of 11.86 km<sup>2</sup> with a growth rate of 10.09 %. The decadal increase of population in Mysore was 799,228 with a growth rate of 24.02 %. No urban expansion was identified in Srirangapatana urban during this period, but witnessed an increase of population with a growth rate of 8.17 %. The extent of urban sprawl in the city is evident from the growth rate over the last ten years. The process of development and expansion of the Mysore city was determined and planned by Mysore Urban Development Authority and Mysore city Corporation. Urban agglomeration (Table 3) with a growth rate of 10.09 % in area and 24.02 % of population in 2001. Due to the growth of 10 additional villages in 1991, which were incorporated under the Mysore urban

agglomeration and the number of outgrowths has increased from 12 to 23. These outgrowths are: Alanahalli, Bhogadi, Chikkaharadanahalli, Datagalli, Hebbalu, Hinkal, Hutagalli, Srirampura, Vijayasripura, Yaranahalli and Satagalli.

In the second stage of urban expansion, as shown in Figure 2, there were 23 outgrowth villages, out of which 22 were from 1991. Table 2 shows the largest of 12.01 km<sup>2</sup> area was added to the outgrowth from Hebbalu village and least of 0.02 km<sup>2</sup> from Kukarahalli and one village, namely, Lingambudi was added in 2001. With the additional area of 11.68 km<sup>2</sup> added from submergence of 10 outgrowths of 1991 resulted in the increase of Mysore urban from 115.71 km<sup>2</sup> in 1991 to 127.41 km<sup>2</sup> in 2001. as seen in Figure 2. No change was traced in the urban area and there no new outgrowths in Srirangapatana during this period. The highest of 30,653 populations added to the outgrowth of 1991 is from Malalavadi while Hinkal recorded a population of 12,132, in 2001, followed by Hutagalli and Belvata. A Least population of 169 and 188 noticed in Chikkaharadhanahalli and Datagalli in 1991 and 2001, respectively. The population of Srirangapatana witnessed a growth rate of 8.17 % in 2001 with an increase in population of 32,222. The entire Mysore Srirangapatana Region witnessed a population growth rate of 23.32% and spatial expansion of 8.86%, which was comparatively very low. The urban expansion growth rate dropped down during this stage of expansion.

#### 4.3. Stage 3 or Late Stage of Urban Expansion 2001 to 2011

The expansion of the Mysore Srirangapatana Region in this stage is confined to a 15-km radius. New census town emerged in Mysore urban in this stage of expansion namely Elwala on the east and Kadakola, in the south of Mysore, as shown in Figure 2 the region was confined to 179 villages, including the 15 outgrowth villages, in the decade of 2001 and 2011. Table 4 shows that the total population of the Mysore urban increased to 1,017,105, in 2011 with the growth rate of 27.26 % but the total population of Srirangapatana urban reduced to 5.93%.

**Table 4 Change in Population and Urban Expansion between 2001-2011**

Year	Population of Mysore Srirangapatna Region		Total Population	Change in % of Population		Overall change in Population %	Area in km <sup>2</sup>		Total Area	Change in % of Area		Overall change in Area %
	Mysore	SRP		Mysore	SRP		Mysore	SRP		Mysore	SRP	
2001	7,99,228	32,222	8,31,450	-	-	26.43	127.41	15.98	143.39	-	-	20.83
2011	10,17,105	34,135	10,51,240	27.26	5.93		155.52	17.75	173.27	22.06	11.1	

Mysore Urban Development Authority has converted Mohallas into wards for administrative purposes. The city has 65 Wards and 9 outgrowths resulting in an expansion of corporation limit and the population of the city. The area of Mysore City Corporation was raised (Table 4) from 127.41 km<sup>2</sup> to 155.52 km<sup>2</sup> with an urban expansion of 22.06 %. The urban area of Srirangapatana also increased in this stage from 15.98 km<sup>2</sup> to 17.75 sqkm<sup>2</sup> with a growth rate of 11.1%. The population of Mysore agglomeration has increased from 799,228 persons in 2001 to 1,017,105 in 2011 with an increase in the area of 28.11 km<sup>2</sup> (Table 4). The decadal growth rate of population of the entire region was increased up to 26.43 % when compared to previous periods with the urban expansion was about 23.32 %. In 2001, a single village, named, Lingambudi was added as an outgrowth village (Figure 2, Table 2) of Mysore city, resulted with an increase in the area of Mysore urban agglomeration to 127.41. km<sup>2</sup>. Elwala, Kadakola and Koorgalli were newly added in 2011 as census towns in this stage. Srirangapatana urban also went some extent of transformation in this stage. The decadal rate of population increased from 32,222 to 34,135 persons with the growth rate of 5.93% which is comparatively lower than the previous stage. A slow growth of urban expansion of Srirangapatna observed in this stage from 15.98 km<sup>2</sup> to 17.75 km<sup>2</sup> with a growth rate of 11.07. In the latest stage of urban expansion, as represented in Table 4.2 the region consisted of 15 Outgrowth villages of Mysore urban, and 2 outgrowths at Srirangapatna and Hongahalli from Srirangapatna region. In 2001, Chamundibetta recorded the largest of areas and, in 2011, it became a part of agglomeration followed by Hebbalu, Lingambudi and Alanahalli. In 2011, Elwala, Kadakola and Koorgalli recorded the highest expansion where Belvata contributed least for the urban expansion. The spatial expansion of Srirangapatna raised to 17.75km<sup>2</sup> from 15.58km<sup>2</sup> in this decade. Table 2 reveals Hinkal contributed highest of population to the agglomeration of Mysore both 2001 and 2011 followed by Hutagalli and Belvata. Least population of 188 were recorded in Dattagalli in 2001 and Kadakola in 2011. The decadal growth rate of population of Srirangapatna was 5.93 % during this stage.

#### V. DECADAL GROWTH OF URBAN EXPANSION IN MYSORE SRIRANGAPATANA REGION

Table 5 shows the overall decadal wise Urban expansion changes in three stages of Mysore Srirangapatna region associated with area and Population. (Figure 3) Highest population change witnessed in the year 1981-1991 with growth rate of 33.90 % and the least population growth is seen in 1991-2001 with a slow growth rate of 23.32 %. (Figure 3). But in 2001-2001 stage of urban expansion witnessed an increase in population growth rate of 26.43 %. The overall growth rate of population was 108.80 % when compared the population between 1991-2011.

Stages	Year	Change in % of Population	Change in % of Area
Early Stage	1981-1991	33.90%	35.64%
Middle Stage	1991-2001	23.32%	8.86%
Last stage	2001-2011	26.43%	20.83%
Overall	1991-2011	108.80%	78.44%

The highest spatial change in area observed during 1981-1991 with growth rate of 35.64% and least change in area witnessed during 1991-2001 with a growth rate of 8.86%. (Figure 3). In 2001-2011 the Urban Expansion growth rate increased to 20.83% from 8.86%. Maximum level of expansion happened during the period of 1981-1991. Expansion was moderate during 2001-2011, while the least expansion is noticed during 1991-2001. Overall expansion rate was 78.44% during the period between 1981-2011.

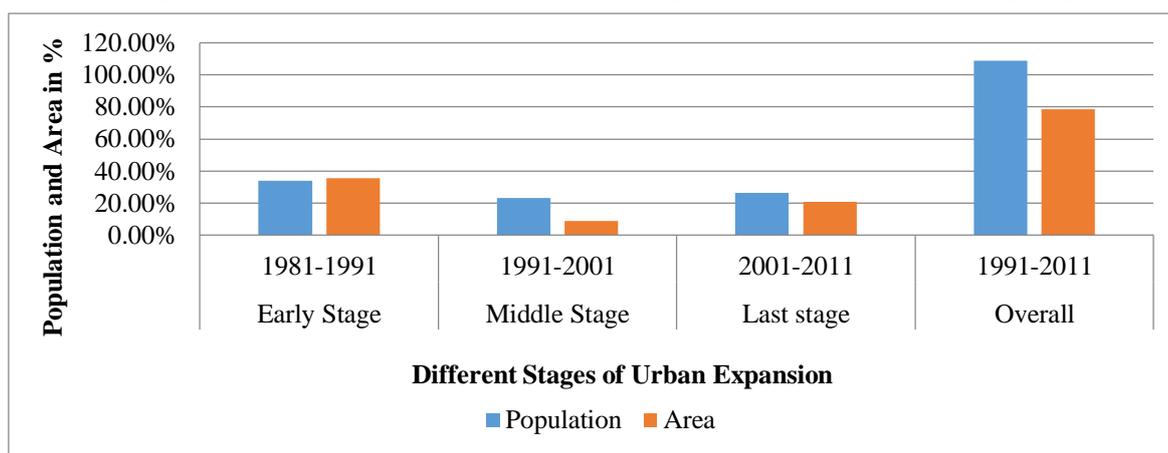


Figure 3 Change in % of Urban Expansion in Mysore Srirangapatana Region.

**CONCLUSION:** Urbanization is an ongoing phenomenon which is very difficult to capture through any single approach or analysis, especially in India. This paper has tried to capture some aspects of urbanization from history to present situation. And find that it is a process which is linked to many larger structures and process.

The urban expansion studied over a period from 1981 to 2011, initially there were 190 villages in 1981 and further number of villages reduced to 179 by 2011 due to the agglomeration of outgrowth villages to Mysore city. Since 1981 there was no progressive growth in urban expansion happened in Srirangapatana, but there was increase in population. As Srirangapatana is surrounded by irrigated villages, there was no scope for the faster rate urban expansion. Mysore Srirangapatana region experiences the maximum rate of urban expansion during the Early stage of Urban expansion that is from 1981-1991 with a growth rate of 35.64%. The minimum rate of urban expansion was identified during the Middle stage of Urban Expansion during 1991-2001 with a growth rate of 8.86%. The Urban expansion of the region is truly towards North west, but not exactly towards North as there is an agricultural belt.

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