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Transitioning Cities: Choices and Agenda to Address Growth and Management: The Case of Bangalore

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***Abstract*:** *The growing urban problems such as population expansion, urban sprawl, disparities between city core and its periphery, urban decay in city centres, increasing traffic volume and congestion, and inadequate fiscal resources and budget provisions for infrastructure pose fresh challenges as well as opportunities for rethinking the city development and management. The cities are attempting to seize both local and global opportunities and they must address the dilemmas of planning for safeguarding the environment, provisioning of basic services, inclusive development, understanding the changing pattern of the city for institutional setup in both regional and local contexts. This may be possible through active participation of citizens and all the stakeholders along with the adoption and deployment of interventions. The authors trace the important patterns concerning the population, urban structure and social-economic (income) structure between the census periods. These patterns are significant for formulating balanced spatial plans to address growth and sustainable management.*

Key words: *Transition, Densities, Urban Sprawl, Land use, Environment, Spatial Planning, Governance.*

I. Introduction

Cities are in constant change. The older parts of Indian cities are witnessing greater land use transformations, while new areas are opened up for urban expansion. India has 5161 cities and towns. About 37.87 percent of the total urban population are living in 35 metropolitan cities as per the census 2001. The city structure comprises of central business districts including old city and cantonments, planned developments such as residential neighbourhoods with the efforts of organisations such as Urban Development Authorities, Cantonment Boards, etc; unauthorised colonies, revenue layouts, slums and squatter settlements and urban villages in the urban-scape of metropolitan cities in India. These are often locked within the city landscape with poor infrastructure provision. According to a 2002 NSS report on 'Housing Conditions in India', 22 cities with more than a million people, have slum population ranging from 10% to 54% of their total population. In metropolitan cities (million plus), a feeble formation of central business district with predominantly trade and service activities and often, aspiring to be a part of global economy; and a larger hinterland region comprising of two or more towns and villages, linked with road networks. The remaining hinterlands are agricultural area and vacant undeveloped land. According to Census 2001, there are spatial growth differentials in mega cities and there is no exception in case of Bangalore. Bangalore Urban Agglomeration is experiencing a very high spatial growth followed by the high density, high rise and growing infrastructure stress on parking, road space, open spaces, amenities and services; whereas, in case of Delhi, the periphery is also witnessing a very high growth[1]. The activity of spatial planning revolves around organising the territories and complexities associated with it for sustainable development.

Metropolitan cities for the long time have been subjected to planning concepts, where as the periphery has been encouraged to receive the population, while dispersing the activities from the city centres to periphery. The understanding of the existing pattern and dynamics through population, area and social economic aspects will enable the planners and urban managers to formulate effective goals and objectives. The paper is attempted to make comparative studies on secondary data sources.

II. Bangalore: A Changing City

Bangalore, the capital of Karnataka State is one of India's fast developing city with an average annual exponential growth rate of 4.06% and population of 8.50 Million (Provisional Census of India, 2011). Bangalore is located at 12° 50' North Latitude and 77° 57' East longitude, over the ridges delineating four watersheds, viz. Hebbal, Koramangala, Challaghatta and Vrishabhavathi and is situated at an altitude of 920 m above mean sea level. The mean annual total rain fall is about 970 mm. Today, it is India's one of the largest cities, the momentum of its industrial, commercial and information technology growth unequalled in the country. The salubrious climate all around the year has enabled in attracting the investment in technology and other sectors.

III. Demography Profile of The City

The population of Bangalore Urban Agglomeration has risen from 4.13 million in 1991 to 5.68 million in 2001 and an increase of 1.55 million in 10 years and with an average of 155,000 Persons/year. During the inter-censual period of 1991-2001, the city had the highest growth rate among the Indian cities (i.e. of more than 5 million inhabitants) next to Delhi. The city's population has tripled within a period of about 30 years and is now the fifth biggest city in India. The

[1] Census of India, Paper -2, Rural- Urban Distribution, Census of India, 2001 and Handbook of Urbanization in India (Spatial growth During 1991-2001).

population growth trends in 2001 was 3.25 per cent and has increased to about 7 per cent in 2011, it is expected to reach the 10 million mark by 2015.

IV. Changing Spatial Growth Trends

The changing population growth trends has been traced three significant periods and are:

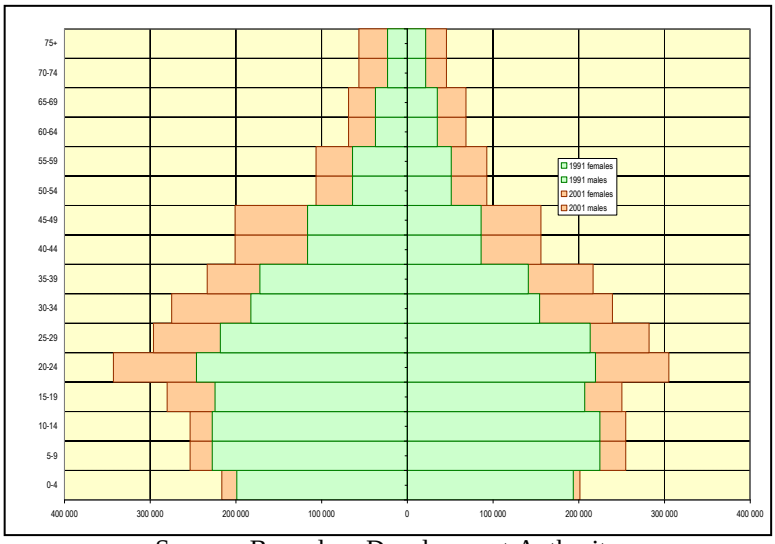
a) The colonial time with the presence of British rulers and they established the army base, and the cantonment area in the city from 1870 onwards.
b) The years 1940 to 1960, with the National Independence and the second world war, industrialization period of the city and the creation of the big public sector undertakings (Hindustan Aeronautics Limited, Bharat Electronics Limited, Indian Telephone Industries)
c) The decade 1970-81 was a demographic boom followed by textile and silk industries development, and from the beginning of the 1990s, Information Technology (IT) and IT enabled services etc.

At present the city's population growth rate, which remains predictably high enough and it is moving towards a period of demographic stabilisation.

V. ERA of Demographic Maturity

The age-wise structure in urban agglomeration of Bangalore[2] brings to light a very steep drop in the percentage of the children, (the adult age bracket is maintained between 20 and 29 years). This particular structure reflects the marked domination of a population in the age-bracket of gainful employment; emphasising the strong appeal that Bangalore exerts on this chunk of the population. In structural terms, this modification of the age pyramid of the city is sustained by the migrations favoured by job offers and training, rising life-expectancy, slump in the natural growth. The age pyramid structure reveals an era of demographic maturity of the population of Bangalore. The increase in the number of households with respect to the population is also an important fact to be considered regarding urban projections, especially housing.

Chart 1: Age Pyramid Structure for Bangalore



Source : Bangalore Development Authority

VI. Changing Urban Spatial Pattern

A: A Radial System

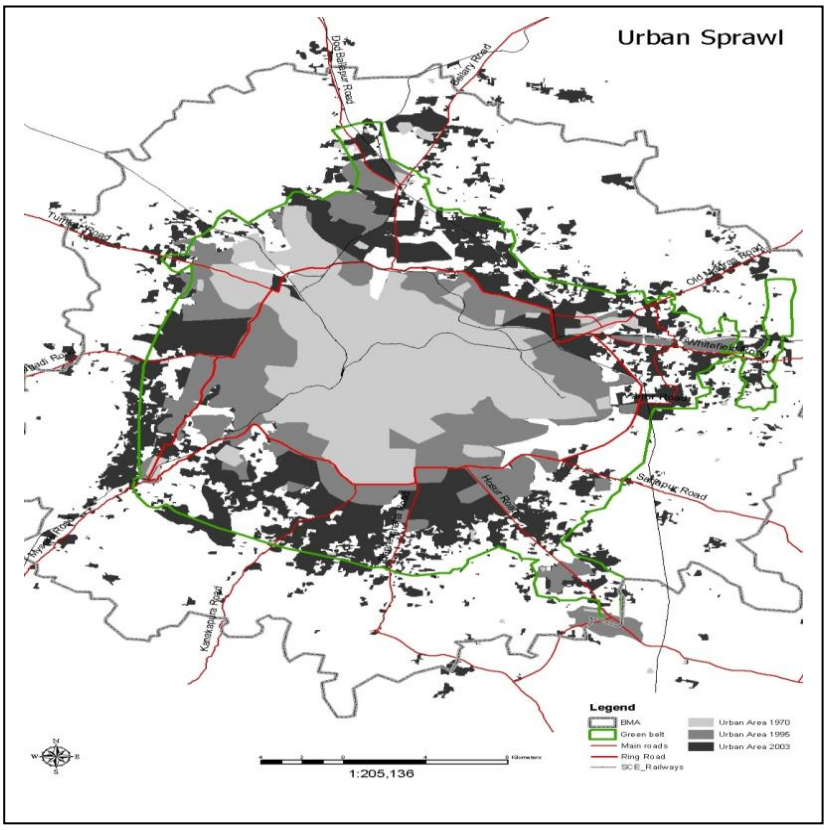
Bangalore is characterized by a radial system formed by five big axes, which converge towards the centre of the city. Among these five main major roads, five other secondary major roads are situated between the main corridors making the structure with a ten-pointed star and systems of ring roads viz. inner, intermediate and outer ring roads. These constitute the organisation system of the city and service the bulk of the industrial, commercial and residential activity.

B: A Multi-Directional Extension

The urbanized area of the agglomeration increased from 202 to 288 sq.kms from 1983 to 1990 and it increased to 464 sq.kms in 2003. An average of 1350 hectares /year of land has being utilised for the urbanisation process and thus, expansion of extensions are very significant and it gives the extent of the efforts to be deployed to satisfy the demand, develop the lands and provide sufficient housing, potable water, energy, civic amenities etc. In the absence of the natural limit pronounced, the city today stretches in all the directions and along the major corridors. The growth of urbanization along these axes generally seems to be determined by the industry, the inhabitants occupying the intermediary spaces. Corridor type urbanisation is observed along the National Highway and State highways. The Devanahalli-Yelahanka

[2] Estimated, on one hand, from the 1991 pyramid population and the proportion of 0-6 in 1991 and 2001 in Bangalore (censuses) and, on the other hand, from the age pyramids in 1991 and 1999 in urban Karnataka (SRS).

corridor which is the major connector to the International Airport has seen growth and rapid development since 2000. The sprawl impacts the service provision and agricultural land adversely.



Source: Bangalore Development Authority

For the planning purposes and overall governance, the Bangalore Metropolitan Area[3] comprises of:

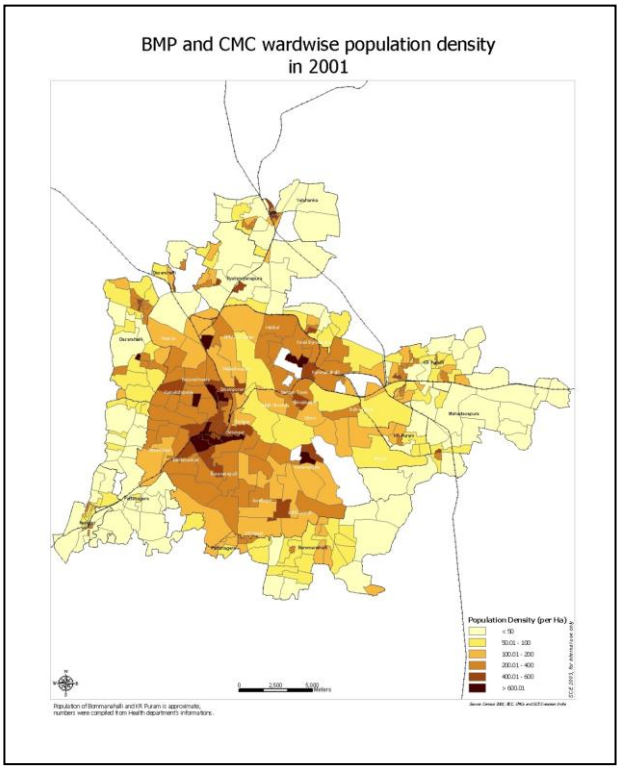
a) The Bruhat Bangalore Mahanagara Palike (BBMP) or Greater Bangalore, it includes Bangalore City Corporation area, the erstwhile seven City Municipal Councils and one Town Municipal Council and 111 villages an extent of 696.17 sq km, with 84.74 lakhs as per census 2011.
b) Bangalore Development Authority: the local planning authority prepares the master plan for the Bangalore Metropolitan area with an area of 1294 sq.km.
c) The Bangalore Metropolitan Area (BMA) covers an area of 1307 sq.km and comprises the Bruhat Bangalore Mahanagara Palike, surrounding villages and the Bangalore-Mysore Infrastructure Corridor Project Area (BMICPA)[4].

The expansion of the boundaries of the BMP to form the BBMP is significant, as the area for the corporation has been enhanced to 800 sq.km of area. The enhanced area has contributed to the complexities of development and management.

VII. Diversity Of Densities Inside The Agglomeration

The overall density of the population in agglomeration[5] is 130 persons/hectare, which is a relatively a low figure when compared with the surface area available for the residential purposes[6] and it is close to 300 inhabitants/hectare, a high density. The occupancy rate is very high, while there are large vacant spaces in the city under Public and semi Public uses. Inside the erstwhile Bangalore City Corporation, the overall density is about 214 inhabitants/hectare. The density of population in the city corporation does not however seem to have progressed between 1991 and 2001, which can be explained by the reduction in size of households, competition between the trade and commerce, and housing in the core area and the transfer of the population growth on the CMC territory. The population density map of Bangalore brings out two historical parts of the city (Old Petta to the West and Cantonment area in the East) separated between them by a North-West/South-East arc of very low density occupied by the administrative sector, park and open spaces (Cubbon Park) and military grounds.

[3] The Bangalore Metropolitan Area (BMA): BMA comprising of a Bangalore Mahanagara Palike, seven City Municipal Council and one Town Municipal Council and 111 villages.
[4] Bangalore Development Authority, Master Plan: Vision Document – 2015, Bangalore
[5] With respect to the urbanized surface in 2003
[6] The semi net residential space occupies close to 40 % of the overall surface (CDP 95 data)



The distribution of the economic activities reflects the history of the city, its different stages of development as well as the underlying socio-spatial contexts. Several distinct combinations therefore emerge from the geography of the activities of Bangalore. Within these two parts, the highest densities are seen in Chickpet, Cottonpet, Binnypet and along the Mysore road link (Padarayanapura, Jagajeevanramnagar, Bapujinagar) between the railway track and the SH 17 and the North- East sector of the city (Hebbal, Kaval Byrasandra, Shivajinagar). Within these areas, very high concentrations of population are sometimes seen as in Cottonpet (620 inhabitants/hectare), Chickpet (560 inhabitants/hectare), Rajajinagar (440 inhabitants/ hectare) and Kaval Byrasandra in the North-East (400 inhabitants/hectare). Higher densities more than 800 inhabitants/hectare are seen along the Tumkur Road in the Bhashyamnagar and Prakashnagar wards which indicate the socio-economic conditions and overcrowding of housing and its conditions. Tendencies towards higher density of population are observed along the main corridors (Mysore Road, Magadi Road, Tumkur Road).

VIII. Distribution Of Incomes

The work carried out by the Bangalore Local Urban Observatory and UNCHS[7] and "Information-Based Strategies for Urban Management" published in the Bangalore City Indicators Program indicate some important trends. Though, this work is based on a specific survey concerning 3000 households of the Bangalore Municipality of limited statistical base, interpretation is to be carried out with caution. The study reveals the trends. The survey data show that the income of the households has increased on an average by close to 10% per year, which is considerable. The analysis was carried out by dividing the entire population into five quintiles and comparison of the same reveals that the annual growth rate change is from 2.7 percent for the first and 13.7 percent for the fifth. The disparity ratio of the incomes between the first and the last quintile has changed in ten years from 4.9 to 13.6, which is a real qualitative jump that implies a profound change in the equilibrium of the city and a transformation phase. In order to factor the inflation, the incomes in 2001 were calculated on the currency constant of 1991 by deflating the rupee on the dollar[8]. This data indicates the important changes of the Bangalore's social economic structure whose consequences should be considered for the urban planning in terms of transport, housing etc. While the traditional inequality was till today moderate, we are now about to witness emergence of a new society, marked by a strong inequalities and disparities. Broadly, three categories could be identified as a pattern:

- Category- 1: that is rapidly expanding and reflects patterns similar to the income /consumption pattern of those international standards of comfort (about 25 percent
- Category -2: that is stagnating and remains confronted with the difficulties of daily life.(About 50 percent)
- Category -3: areas of poverty in the slums and the under-developed housing. (About 25 percent).

Though the variations and sub variations in the ranges are possible, in terms of physical development and planning, it will be important to consider the categories discussed.

[7] Bangalore City Indicators Programme. Society for Development Studies. UNCHS Regional Institution for Asia Pacific and Arab Regions, November 2000.
[8] 1$ = INR 18.2 of 1991 = INR 48.69 of 2001

IX. Pattern Of Use Of Resources

In the past decade, various authorities and parastatals have drawn up plans for the management of resources. Notable ones include the City Development Plan (CDP), Revised Master Plan 2015 and the Greater Bangalore Water and Sanitation Plan, the Metro Rail project plan. The CDP has enabled Bangalore city and BBMP to access central funding and mobilise resources for the city development. The JnNURM mission has emphasised on the "reforms" to be taken up. The Master plan (RMP 2015) has given regulatory and land use controls for the protection of the lakes and valleys. The other areas include the recycling of water, solid waste management and use of technology for creating citizen interfaces and information platforms. The use of resources and the changing pattern will need to be addressed with respect to the changes in the population, social and economic structure.

X. Conclusions

Bangalore as city in transition requires multiple interventions at different scales and levels. This is to preserve the continuity of the urban dynamics related to population, social and economic structure as well as development. While predicting the future trends and patterns, the ongoing initiatives and the plans will have to be reviewed and analysed for its impact on the pattern. The resources base will have to be worked out for strengthening the effective working of the city. The impact of the investments and undertaking of the large infrastructure projects such as the Greater Bangalore Water Supply project, the implementation of metro transportation project, the development by various public authorities in the last inter-censual period which needs to be addressed.

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BIOGRAPHIES

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