



**WORKING  
PAPER**

**194**

**EMERGING DEVELOPMENT  
ISSUES OF GREATER  
BANGALORE**

**G S Sastry**

**INSTITUTE FOR SOCIAL AND ECONOMIC CHANGE  
2008**

# EMERGING DEVELOPMENT ISSUES OF GREATER BANGALORE

G S Sastry<sup>1</sup>

## **Abstract**

*Rapid urbanisation has been posing a serious threat to urban development as a result of lack of preparedness in terms of planning and infrastructure availability in the cities of developing countries. Bangalore, one such city of India, with global importance as IT and BT capital, has been experiencing acute urban problems due to rapid urbanisation, area expansion, and lack of planning and associated infrastructure. In addition, the recent initiative by the government of Karnataka in the formation of Greater Bangalore by increasing the municipal area of the city by almost more than two times the existing area with the objectives to improve the administrative system and infrastructure have given rise to innumerable problems of development. This article analyses the historical development of Bangalore and its capabilities, and hence, underlines the need for a thorough understanding of the city's location-specificity in the context of 500 year old history in promoting development.*

## **Introduction**

Rapid urbanization, a global phenomenon projected specially for developing countries in the coming centuries, appears attractive for its much expected benefits of overall development and human welfare. However, developing countries are likely to experience more serious problems than prospects for the simple reason that they are not prepared for such a sudden urban shock on account of acute financial constraints, poor infrastructure, lack of appropriate technology and inefficient institutional structure to promote and monitor the process of rapid urbanization. In fact, recent trends of urbanization have reflected these problems. In the rapid urbanization process, mega cities are the most affected urban centres as they have been experiencing inefficient planning with absolutely no planned vision for their future development. Added to this, both national and state development policies have been invariably encouraging the rapid growth of large cities as 'islands of development'

---

<sup>1</sup>Centre for Ecological Economics and Natural Resources, Institute for Social and Economic Change, Bangalore-560072, gssastry@isec.ac.in

without considering even their immediate neighbourhoods, thus imposing the problem of rural-urban dichotomy. Such a development process, in turn, has been leading to more serious issues of environment and development in the peri-urban areas of large cities for lack of planning of various urban functions and services like: land use, housing, transportation, water and sanitation, solid waste management, and other infrastructure and services. This is, in addition to innumerable infrastructure services and environmental problems posed to the main city on account of rapid urbanization. Bangalore, an 'emerging global city' has been experiencing several urban management issues.

### **Historical Development of Bangalore**

Bangalore, a globally known Information Technology (IT) and Bio-technology (BT) centre, but without such global facilities in terms of infrastructure and services, has been passing through unhealthy process of unplanned growth and development, and associated infrastructure and service deficiencies contributing to its inefficient management. Such a disturbing growth process is in spite of well-developed planning institutions like; Bangalore Development Authority (BDA) and Bangalore Metropolitan Regional Development Authority (BMRDA) established by specific acts of legislation by the state to promote the planned growth of the city and its region. On the other hand, such unplanned development may imply that Bangalore might have inherited the development process from its past experiences of development. In this context, it is worth reviewing the process and pattern of historical development of the city of Bangalore.

If one looks into the historical foundation of the city, the Fort near the present City Market or Krishna Rajendra Market and the Barracks near the Halsoor tank were the main foundations of the city built in 1537 and 1809 respectively. These historical foundations were gradually developed with unique specificity. The Fort neighborhood was developed on the basis of the philosophy of a city by temple builders, agriculturist turned warriors who patronaged wholesale and retail traders, highly skilled

artisans etc. Hence, the Fort neighborhood was developed as a typical native town with traditional characteristics of bazaar, temples and residential neighbourhoods etc. The barracks neighbourhood, on the other hand, was developed to cater to the needs of British troops and officers who were relocated from Srirangapatnam near Mysore. Halsoor neighbourhood was developed as a 'spot of England in India' with artillery and cavalry, barracks, parade ground, the mall, fine and spacious bungalows, classical gothic, public houses, bars, taverns, and night clubs. Hence, the city was developed on east - west zonation with east having high concentration of churches and mosques thus encouraging, by and large, the western civilization, and west with temples characterizing the traditional city (Rao and Tewari, 1979). However, as the city gradually developed, a fine-tuning of inter-mix of two cultures has been evident in the form of location of these people in both the areas.

### **The Process of Urban Spread in Bangalore**

For the said historical reasons, Bangalore was developed with dual characteristics since its foundation. As a result, the city has been attracting various categories of people from different regions because of the patronage they could get more interestingly; this tradition has been maintained even to this day, but with its changed importance. Formerly, the attraction was based on its importance as a specialized centre for trade, commerce and industry, and now, the basis has been shifted as the city has gained global importance as Information Technology (IT) and Bio-technology (BT) centre. Therefore, since the beginning, the city has been identified as a migrant dominant city (Govt. of Mysore, 1968), because of the thorough adoption of migrants to the local culture and activities. This fine blending of migrants with the locals has been very much evident since inception in the core areas of the city neighbouring the Fort area like Cottonpet, Akkipet, Ragipet which denote the concentration of trading activities like cotton, rice and ragi, followed by the concentration of people associated with these trading activities in the immediate neighbourhoods. A similar concentration of flower and

vegetable selling communities are also found in the neighbourhoods of the City market and Sri Dharmaraya Swamy temple. Gradually, the city grew as an important trade and industrial centre for the entire southern India in the following centuries. As a result, the city started expanding according to the needs and convenience of trading and industrial activities.

To begin with, the physical spread of the city was in the form of residential leap-frogging and residential infilling along the ribbon shopping and commercial activities within an accessible distance range of about 2 to 4 miles in the neighbourhoods of the two nuclei. As characterised about the pattern of physical spread, Bangalore has almost followed the pattern of leap-frogging and infilling process for its physical spread with institutional leap-frogging of the Indian Institute of Science, popularly known as the TATA Institute as the earliest process and gradual infilling of residential neighbourhoods like Malleshwaram, Srirampuram, Vyalikaval, Sheshadripuram, and Sadashivanagar. The second type of urban spread was identified with leap-frogging of large-scale industries like Hindustan Aeronautics Limited (HAL), Hindustan Machine Tools Ltd. (HMT), Indian Telephone industries Ltd. (ITI), and Bharath Electronics Limited (BEL) about 8 miles from the city market. This was later followed by gradual infilling of residential areas along the major transport route and near the industries and interstitial areas like industrial townships. Similarly, the third type of spread was also evident in the form of institutional leap-frogging of Agricultural University campus at Hebbal, Bangalore University campus at Nagarabhavi, and new industrial extensions (Rao and Tewari, 1979). Hence, historically, Bangalore growth and physical spread had been more due to the location decisions of certain important industrial and institutional activities, rather than, as an outcome of any city planning exercise or planned vision of its development. Of course, infilling was guided by some form of planning exercises by the planning institutions, but not in the complete sense. As a result, the urban spread was gradual with the formation of various residential layouts formed by both BDA, several private housing co-operative societies as well as unplanned growth. In fact,

during the infilling process, the city experienced much higher rate of unplanned growth than the planned development (Ramachandran, 1985). Even in the planning process, planning itself has generated unplanned neighborhoods (Nair, 2005). In particular, the residential layouts formed in the earlier stages of development were more citizen-friendly as compared to the so called modern layouts in terms of land use planning and its utility. In the old residential layouts of the city, provision was made for more efficient use of the available land according to the changing land use requirements to meet the emerging future needs. This has been demonstrated with efficient use of then planned service roads in solving the current major emerging issues of vehicular parking space in the context of rapidly increasing vehicular ownership and movement. However, such an *ad-hoc* growth and spread pattern were affordable to Bangalore then as the city had neither population nor land pressure. However, the recent experience sends a very strong message that replication of such historical pattern of urban spread is certainly not feasible in the current context for the simple reason that rapid population growth is imposing high pressure on land for its accommodation and associated activities.

Interestingly, whether one likes it or not, the process of urban sprawl of the city has taken almost the same historical pattern of leap-frogging and infilling in the recent decades as well, but, now in the form of software and other industrial complexes, and infrastructure projects. The leap-frogging of huge software industrial complexes towards east, near Whitefield, and south at the electronic city near Hosur and also Sarjapur, boarder towns of Tamil Nadu; Bidadi industrial area to the west, and international airport to the north are the new city limits established on account of the location decisions of the industrial and infrastructural projects. This seems to be the widest leap-frogging that the city has ever experienced in its history. Hence, on similar historical lines, infilling of residential, commercial, and industrial activities are likely to take place in the coming years. Since tough competition prevails for land by various activities, infilling process needs to be promoted with utmost care by

the planning authorities to ensure planned development of the city. Probably, both BDA and BMRDA have to work in coordination for such a planned development process for the overall development of the city and its region, though their jurisdictions differ in terms of their planning areas.

Similar to the well-recognized leap-frogging and infilling process followed by the city for its physical spread, the historical fact demonstrates the delimitation of the city limits as well. It is interesting to note that the name 'Bangalore' was derived historically from the name *Benda kalooru* (town of boiled beans) by an anecdote (Website: History of Bangalore, 2007). If one looks at the historical development of the city, interestingly, the city boundary limits were laid as early as in 1537 in all the four directions by the founder of the city, Kempegowda II, probably with an intention that Bangalore should remain as a small and compact town. However, regional and national importance that the city had acquired for its trade, commerce and industries in the beginning and the recent global importance on account of its Information Technology (IT) and Bio-technology (BT) specialization have forced the renewal of the city limits frequently according to the emerging needs. The four city delimiting points then established by the founder of the city are being maintained as historical monuments even to this day, and some of them have been converted into tourist spots. In fact, the boundary limiting marks established as *Mantapa with a Tower* is the emblem of the Bangalore Mahanagara Palike (Bangalore Metropolitan Council). The re-established current city limits is in spite of well-developed city planning institutions like the then City Improvement Trust Board (CITB) which is currently known as the Bangalore Development Authority (BDA) and Bangalore Metropolitan Regional Development Authority (BMRDA). These planning institutions are supposed to impose planned growth of the city since their inception through efficient planning strategies. However, excepting certain residential layouts like Jayanagar, some parts of JP Nagar, and Sadashivanagar, the remaining areas have experienced unplanned growth with inefficient land use pattern. This is because the planning

authorities have failed to impose contiguous development process on a regular basis with more realistic land use planning and its strict imposition. This has also been the opinion of the citizens of Bangalore as they expressed that Bangalore is an unplanned city or the planning system in the city is chaotic (Heitzman,2004). The immediate ramifications of such unplanned process has been that the city has no well planned access roads to several peripheral residential layouts developed by the BDA which can carry huge traffic generated between the city centre and its so called planned residential layouts. This has ultimately resulted in frequent traffic jams, accidents etc., which, in turn, has led to 'instant transport management approach' like conversion of several narrow roads as one ways, widening of narrow roads etc. All these problems are mainly due to lack of a well conceived vision plan for the city prepared well in advance to absorb all future rapid urbanization shocks. In this context, if we recall the Comprehensive Development Plans (CDP) developed by the BDA from time to time to promote planned growth of the city they have ended up more as an engineering exercise than a citizen-friendly document depicting the field realities. However, recently, some attempts have been made to incorporate the social dimension in the CDP with the help of a French company to make the CDP citizen-friendly.

Now, one more urban sprawl has been recently proposed by the Government of Karnataka with special initiation from the former Hon'ble Chief Minister of the state by proposing the concept of 'Greater Bangalore'. According to this proposal, Greater Bangalore will be identified as a single administrative unit consisting of the existing Bangalore Mahanagara Palike (BMP) (226 sq.km), 'seven' city municipal councils (Byatarayanapura; K R Pura; Mahadevapura; Bommanahalli; Yelahanka; Dasarahalli; and Rajarajeswarinagara with a total area of 257.97 sq.kms), 'one' town municipal council (Kengeri -34.0 sq.kms) and 110 villages (223.03 sq.kms) adjoining these areas. The 'Greater Bangalore' concept was officially proposed in September, 2006 and implemented on 16<sup>th</sup> January, 2007 with the following four main objectives: i) improvement and coordination of infrastructure development; ii) upgradation of the

quality of urban civic services; iii) strengthening the administrative capacity for enforcing various rules and regulations; and iv) optimizing expenditure on establishment. The total area of the proposed Greater Bangalore administrative unit is 741 sq. kms., which is more than three times the current BMP area. However, the merger is also constrained subject to i) population of the area specified for merger should not be less than 3 lakhs; ii) population density should not be less than 3,000 persons per sq. km; iii) revenue generated by the local administration in the last preceding census is not less than 6 crores per annum or Rs 200 per capita per annum; and iv) per cent employed in non-agriculture activities is not less than 50 per cent of the total employment (The Times of India, November 4, 2006)<sup>2</sup>. Such a re-establishment of the city limits with a vast area coverage would impose massive implications on all aspects of city functions and services like: economic, environmental, infrastructure, planning, administration, and political aspects of the city growth and development as well as on socio-economic status of consumers which has been talked over for quite sometime in the recent decades. One can find similar experiences of area expansion in metropolitan areas both within India and outside. Two such illustrations of Delhi and Paris are detailed here.

It may be recalled that Delhi was facing almost a similar situation of unprecedented population growth and haphazard development during post independence. Hence, in order to organise its development in a planned way the Delhi administration in its master plan 1960 proposed an idea of planned decentralization to outer areas and even considering outside the Delhi Region. This is in the context of developing Delhi in a regional context by expansion of its city limits to siphon off the population pressure, and provide adequate infrastructure to the growing population. This had ultimately resulted in a final master plan of Delhi in 1962 with a much larger region named as the National Capital Region (NCR)-Delhi with a total area of 30,242 sq. kms, consisting

---

<sup>2</sup> See, Karnataka Gazette, Government of Karnataka, Bangalore, January 16, 2007.

of the National capital territory of Delhi (1,483 sq. kms), and some portions of its neighbouring states like Haryana (13,413 sq. kms), Rajasthan (4,493 sq. kms) and Uttar Pradesh (10,853 sq. kms). To give legal status to the NCR to regulate its growth and development, the parliament enacted a planning board act in 1985 with the concurrence of the neighbouring states whose areas fall in the planning area of the NCR. In 2001, this area experienced further expansion to 33,578 square kilometers by including some more areas of Rajasthan (Website: National Capital Region, 2007). As a contrasting situation, the well known global city of Paris, the capital city of France has also been subject to much greater magnitude of urbanisation. However, both the Provincial Government and the Federal Government of France, did not allow for a similar expansion of the city of Paris that has happened in the case of Delhi. Instead, both the governments have kept the municipal area of the city of Paris intact which has remained as 105 sq. kms since 1861 and allowed for the peripheral area to urbanise rapidly. As a result, while the population of the city of Paris has declined by 26.9 per cent, its peripheral population has increased by 196.6 per cent during 1921-99 (www.demographia, 2007). Such development approaches are rarely found in developing countries, as their development priorities are different.

### **Socio-Economic Characteristics**

The current socio-economic fabric of the city has the following four categories - high income, middle income, low income, and slum households which may be to a great extent identified as below poverty line households. These categories have their specific requirements in terms of residential, transport, education, health, water and sanitation, commercial, leisure-time and recreation activities. As it is, the city has been experiencing serious problems in serving the people in the above said sectors according to their requirements. Now, one more category of households, the so called urban or rural households with imposed urban characteristics (rurban) is being added to the existing group whose requirements may differ significantly from that of the said urban household categories. A set of socio-economic and environmental indicators for the

city and its region substantiate the prevailing city-region disparities (Table 1). These characteristics in turn highlight the requirements of the households with 'rurban' characteristics.

**Table 1: Percentage Distribution of Households by various Socio-Economic and Environmental Characteristics in Bangalore City and its Region, 2002**

Variable	City	Conurbation	Green Belt
<b>Education</b>			
Illiterates	13	21	30
Primary	4	5	9
Higher Primary	23	25	34
Secondary	32	33	19
Intermediate	7	6	2
Graduation and Post- Graduation	15	9	6
Professionals	7	1	0
<b>Workers</b>			
Unskilled	12	23	50
Skilled	32	40	12
<b>Monthly Household Income (Rs)</b>			
Less than 2,000	10	13	19
2,000 – 6,000	56	70	68
More than 6,000	29	8	7
<b>Infrastructure and Services</b>			
Piped Water Supply	73	8	6
Toilet Facility	66	47	26
Open Defection	1	35	70
<b>Solid Waste Disposal</b>			
House Collection	34	0	0
Dustbin	53	29	2
Open Space	7	64	72

Source: Sastry (2006)

Note: Conurbation: city fringe area; green belt: beyond the city fringe

The addition of population to the city which has different socio-economic characteristics will put additional pressure on the existing infrastructure and resources. While health, education and commercial services, are being provided by both public and private sectors, with suitable regulation by the government in providing these services. The most affected sectors are transport and housing. With the expansion of the city area to 741 sq. kms, it is almost impossible to imagine the transportation problem that the city will face in the future. This is with special reference to the existing road network and available means of transport in the city in meeting the emerging travel demand pattern of the consumers. Similarly, with the new and uniform label to the entire 741 sq.km area of the city that comes under the administrative set up of the 'Greater Bangalore', the land values will jack up to the level that middle and specially low income households may not be able to fulfill their life time ambition of owning a 'home-sweet-home' in the city limits. This inability may, in turn, lead to rampant illegal and unauthorized ownership of lands, which will promote unplanned growth. Such a most unwanted development process would end up Bangalore as a big slum which will have repercussions on the land use planning and location of various activities of the city. Similarly, the city's economy may shift to the higher share of both middle and low income households with a small share left with the high income group. As it is, the city is popularly known as middle income class city (Rao and Tewari, 1979, Sastry, 1994). The rapid growth of the IT sector in the city has led to larger income disparity between households involved in IT and non-IT sector employment (The Times of India, September 5, 2006). This has more economic implications in terms of rising of revenue for the city development and instead, the government may have to dole out more subsidies to the low income households as a social welfare measure or as a safety-net in managing their urban life. This may be in addition to several on-going programmes on eradication of urban poverty and slum development initiated by both the government of India and the state government.

The environmental condition of the city mainly in terms of air pollution, water and sanitation, solid waste, open spaces, greenery and water bodies etc. will be more serious, on account of the expansion of the city area. With the existing road conditions and additional pressure on account of additional dependence of the so called added urban population on the city functions and services, air pollution will be a more serious issue on account of greater number of people involving in travel for work, shopping, religious, and recreational activities. A rough estimate of emission of various pollutants to the city atmosphere by the transport sector is 2,858 tonnes per day (Sastry, 2006). A similar situation will arise in the case of water and sanitation. While, sanitation may be provided through well-planned network system with considerable investment, water, the most precious natural resource and a basic necessity for human existence will pose a more serious issue in the context of i) its limited resource, ii) restricted supply even to the current Bangalore Maha Nagara Palike (BMP) area, iii) high share of unaccounted for water (Sastry, 2007), and iv) inefficient management of the available huge sewage water. Hence, the prime question that emerges from the point of view of overall city management is that do we need frequent extension of the city limits to make the city unmanageable in terms of various infrastructure and services. And what is the guarantee that the city limits will not experience some more extensions in future decades. Again, in the era of rapid decentralization, is there any need for the promotion of its opposite process of centralization by putting BMP, eight urban local bodies, and several gram panchayats together for the establishment of a huge single administrative unit called the Greater Bangalore. A rough estimate of population of Greater Bangalore by excluding the population of 110 villages as on 2006, is 7.99 million and will cross 8 million mark by including the population of the left-over areas. Hence, by looking at the enormity of the population size of the city, one can assume its huge requirements both in terms of infrastructure and services as well as institutional structure required for efficient city management. Though the state government has earmarked 370,000 million rupees for the establishment

of the Greater Bangalore, this is definitely a meager amount to promote planned development with adequate infrastructure and services. In terms of administrative entity, in the context of proposed Greater Bangalore, it is preferable to manage the city as a single administrative unit, but with decentralised planning of various urban services and functions.

### **Bangalore and Other Metropolitan Cities**

Bangalore became one among the 'million' cities of India as early as 1961 and whose growth and development was comparable with the seven 'million' and capital cities of India. As per the 2001 census, Bangalore ranks fifth, next to Chennai by population size. Population size trend of Bangalore has been smooth all along and very close to the baseline as compared to other metros in general and Greater Bombay, Calcutta and Delhi in particular (Fig.1). However, all the seven 'million' cities have revealed growth trend of bi-model pattern with consistent growth peaks at 1951 and 1981 (Fig.2). In particular, the city had experienced four phases of economic growth after independence which had relevance to the growth peaks emerged during 1951 and 1981. The first phase which was identified during 1951-61, was associated with the development of public sector undertakings in terms of production and employment boom. The second phase was during 1960-70 which experienced a rapid growth of state government bureaucracy and state-run businesses. While, the third phase was identified with the process of 'liberalisation and emergence of private sectors, particularly in the form of electronics companies in a big way, during the 1980s. The fourth phase which began in late 80s has been mainly attributed to the booming of private sector activities and associated job creations in the software sector (Heitzman, 2004 and Sastry, 1988).

The area of the city recorded a significant increase by 92.1 per cent and the population by 37.8 per cent during 1991-01. As per the projected estimate, the population of Bangalore would reach 9.8 million by 2016. While, IT development has been in progress, the corresponding infrastructure and services required for smooth functioning of IT sector

have not been geared up. The main victim of such expansion is the peripheral areas of the city as it has experienced uneven development and severe environmental problems with unique 'rurban' characteristics which is quite different from the city. Some of the characteristics are higher concentration of households with large household size, higher illiteracy rate, higher share of unskilled and primary sector workers, higher share of medical expenses as compared to the city, larger share of *kacha* or semi-*pacca* house structure, least water and sanitation facility, and almost no solid waste disposal provision and high concentration of slums and uneven city- peripheral transport facility (Sastry, 2006).

By comparing Bangalore with the world-ranking cities with population 7 million and above with municipal area as their administrative boundary, Bangalore ranks 13 with preceding and succeeding cities as New York and London by population size respectively. Similarly, by population density, interestingly, Bangalore city (10,796) is very close to New York (10,010). The highest population density is recorded by Mumbai (19,247), while the least is at Chongqing (375). Hence, by population size, area and population density, Bangalore is every close to New York and Moscow cities (Table 2). However, the main issue is not the proximity of Bangalore to New York and Moscow in terms of the said population characteristics as it is deceptive, but Bangalore's preparedness to absorb exodus population in the name of IT and BT development and associated progress that the Bangalore is experiencing in the recent decade. While, developed economy like US with high living standards act accordingly to restrict rapid migration into the city to safeguard the standard of living of their citizens, unfortunately such a process do not exists in the case of developing counties as their priorities are different and hence, the case of Bangalore. Therefore, the main problems that the city has been experiencing are rapid population growth, area expansion, unplanned growth and lack of adequate infrastructure and services to meet the demands of the city's functional specialisation in terms of trade, industry and now IT and BT.

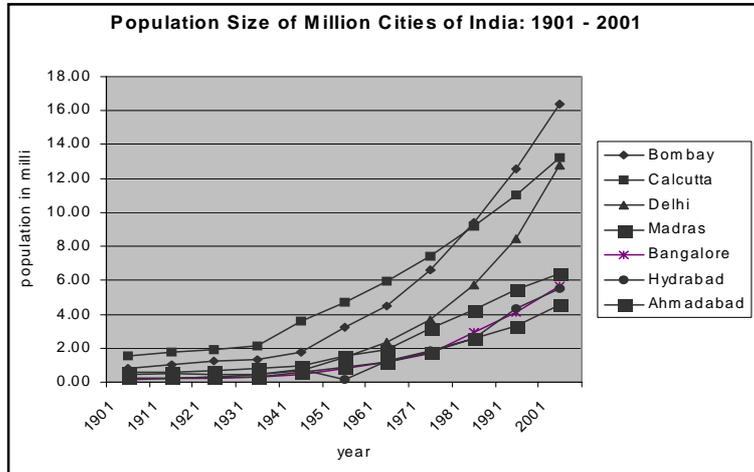


Fig. 1

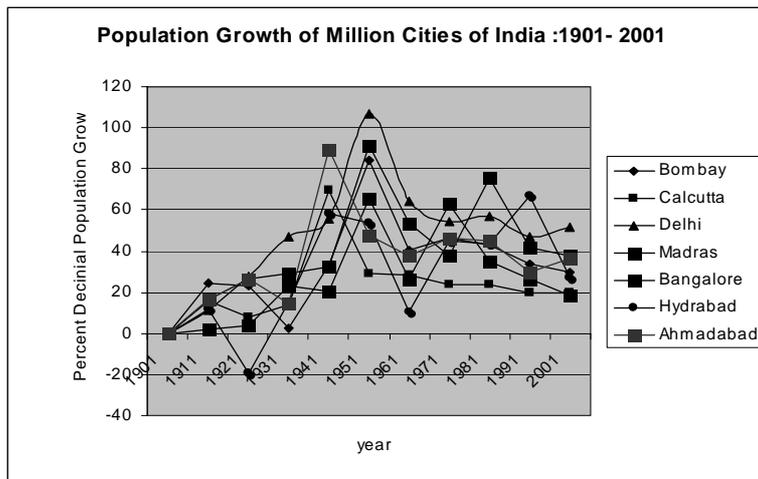


Fig. 2

Table 2: World Ranking of Cities by Population, Area and Population Density

Rank	City	Population	Area (insq.km)	Population density (persons / sq.km)
1	Chongqing	30,904,000	82,401	375
2	Shanghai	14,735,000	6,633	2,222
3	Beijing	12,620,000	16,799	751
4	Mumbai	11,914,000	619	19,247
5	Sao Paulo	10,406,000	1,492	6,975
6	Seoul	10,323,000	604	17,091
7	Tianjin	9,665,000	5,657	1,709
8	Istanbul	9,200,000	5,708	1,612
9	Jakarta	9,113,000	591	15,420
10	Mexico City	8,591,000	1,500	5,727
11	Moscow	8,405,000	878	9,573
12	New York	8,008,000	800	10,010
13	Bangalore	8,000,000*	741	10,796
14	London	7,187,000	1,637	4,390

Source: [www.demographia.com](http://www.demographia.com)

Note: \* Estimated population; Population figures refer to different years. Cities with ranks 1,2,3,7&14 (1998); 4 (2001); 5,10&12 (2000); 6 (1999); 8&11 (1997); 9 (1995);13 (2007).

## **Functional Specialisation as Cause and Consequence of Growth**

By functional specialization, Bangalore has consistently emerged as a bi-functional city with specialization in manufacturing and service sectors. In particular, trade and commerce for obvious location-specificity has acquired greater significance. As a result, almost 97.5 per cent of the total work force were employed in non-primary sector with a major share in the tertiary sector (63.6%) (Govt. of India, 1991). However, since 1984, the main instrument for Bangalore's rapid growth has been the IT sector with the establishment of a multinational company, the Texas Instruments followed by STPI first earth station and a group of 13 companies. Especially, during 1992-2003, the number of IT units increased from 13 to 1,154 (8776.9%) while, sales in terms of software export has recorded an unparalleled increase from 1.19 million USD to 2627.7 million USD (220,435.7%). More significantly, growth in export of software in a single year (2000-01) recorded as high as 69.99 per cent. Hence, Bangalore has occupied the first place in the magnitude of software export in terms of million USD (1,590.4) as compared to other prominent software centres in the country [NOIDA (925.5), Chennai (629), Hyderabad (423.4), and Mumbai (342.5)] during 2000-01. Similarly, during 1998-2003, the total investment by the IT companies had increased from 840 million USD to 2.67 billion USD (Bangalore IT website, 2006). For the smooth functioning of the IT sector, it has attracted highly skilled IT professionals whose number is estimated to be more than 1.5 lakhs. Such a rapid growth of the IT sector and associated concentration of professionals and skilled workers to meet the growth objectives of the IT sector, has obviously resulted in the multiplier effect to attract resources and population to the city. As a result, the city started expanding its boundaries on all sides to accommodate IT units and its professionals. Such expansion has been more prominent in the south-eastern sector of the city (Hosur Road, Koramangala, HAL, Whitefield) which has been proposed as IT corridor running from old Madras Road to New Madras Road (Government of

Karnataka, 2004). In fact, Bangalore's contribution to both global and regional economy and development is immense. To the global economy, its contribution is in terms of skilled personnel migrating into the Silicon Valley for higher positions as well as throughout the globe. Regionally, Bangalore has been identified as a 'milieu of translation' involving both public and private organisations adopting to Indian markets, technological complexes prevailed elsewhere (Heitzman, 2004). With rapid population growth, area expansion, functional specialisation and further boost to the city growth and expansion through the formation of the Greater Bangalore, the city development will be a gigantic task.

### **Some Decentralised Planning Hints for Planned Development of the City**

Several interesting suggestions had emerged from the recent discussion on the future growth of Bangalore organized by the Times of India. Broadly, they can be classified into i) Institutions - giving union territory status, strengthening with more resources, public -private partnership, single window agency for management; ii) Planning - no planning vision, visualize the plan and its implementation, uncontrolled construction work, development of II level cities for the location of IT and BT industries; iii) Resource Management - more projects but no land, water bodies and open spaces; dual economy of IT and non-IT sector households, IT and BT credit for Bangalore, solid waste management etc., get more resources for infrastructure development by virtue of its significant IT contribution to the exchequer (The Times of India, September 5, 2006). In the context of heterogeneous composition of the metropolitan economy and power neither the state nor the market will achieve the desired primacy for efficient management. As a result, the benefit of new economies have not flowed to all the inhabitants of the city rather it has a detrimental affect on larger part of the population (Nair, 2005). However, the first and the foremost task required for planned growth of the city is to keep a complete account and control of the entire area annexed to the city and development of a realistic land use plan at least for the areas which

are going to be annexed to the city and imposition of the same by the planning authority. This may require some alterations in the existing land use plan of the city to provide a holistic view of the entire city. In a simple sense, this is nothing but better organization of various activities likely to occur in future for better functioning of the city. All probable activities that a city performs may be put into a broad land use classification as residential, commercial, industrial, transport, and recreational and open spaces. Unlike, previous decades, all the said land use activities acquire special significance in the current development set up. For instance, recreation and open space, which was just a namesake category in the previous plans, acquires greater importance in the context of environment and health conscious citizens. Similarly, transportation, which was marginal in the previous decades, has acquired special significance due to revolutionisation of both public and private transport systems in urban areas on account of rapidly changing urban activities. As a result, the city requires more efficient transportation planning in terms of road network and organization of road traffic in an environment-friendly way. This is in the context of rapidly increasing vehicular ownership and usage in urban areas in order to carry on various time bound urban activities. However, the immediate effects of poor planning are traffic jams, road accidents and higher emission of toxic pollutants to the city atmosphere and associated health problems. On the other hand, as traffic is generated against the organized urban activities like residential, shopping, recreation, work place, education and health etc; most of the transportation and associated problems may be solved by optimum location of various activities with minimum transportation needs. The main traffic generator in mega cities is the home to workplace travel. If this is planned efficiently with minimum transport dependence, a major part of the urban travel problem is solved. Hence, it is high time that such a planning initiative is promoted in Bangalore on a priority basis. Next to workplace, shopping generates significant consumer travel that also needs adequate reorganization in the city. All these planning hints warrant for a thorough decentralization of various urban activities.

Let us take the work-home scenario in the city. In Bangalore, the three major work concentration spots are Vidhana Soudha- Majestic area- City market; KR Puram -White field- HAL; Hossur road- Electronic city; and second level areas are Tumkur road and Mysore road. Except in the city core areas, minimum travel needs to be encouraged in the home-work travel. This means re-organization of residential as well as workplaces to achieve the minimum travel objective. Several residential layouts which are likely to come up in the process of infilling need to be planned in a modern way by keeping the transport needs, and as self-contained units with lot of open spaces, civic precinct, green lawns and amenities, thus fulfilling both consumer as well as environmental requirements. Similarly, in terms of shopping services, the existing City market and Majestic areas cannot bear the future shopping pressure of the entire city including the proposed annexe. Hence, this pressure needs to be reduced substantially by planning several second level civic precinct which should include shopping, recreation and religious facilities may be on the lines of Jayanagar 4<sup>th</sup> block shopping centre at various strategic residential neighbourhoods in the city. Similarly, a replication of M G Road; Brigade Road and Commercial Street shopping activities may be initiated in the emerging planned layouts.

A similar pattern of decentralization of rail and road transport terminals are also essential for the planned growth of the city. Currently, Majestic is the main transport terminal for both rail and road transportation for the entire city. As a result, one will find a huge crowd at all times in a day, thus causing inconvenience to both transportation sector as well as consumers. Like shopping, the Majestic terminal cannot bear the pressure of the entire city's transportation. Hence, it is preferable to decentralize transport terminals to such locations, which are convenient for the destination. The KSRTC and BMTTC have already taken steps in this direction with the location of two such satellite bus terminals at Santhinagar and Mysore road. Many such satellite terminals would decongest the Majestic bus terminal to a very great extent. On similar lines, railways can also identify a few satellite terminals to reduce the

pressure on the city station at Majestic. The potential centres are: KR Puram, Yeshwanthapur, Yelahanka and, Kengeri, The arrival and departure of several trains may be shifted to the said satellite terminals, of course, with good bus connections to the various parts of the city, and thereby reducing pressure on the city railway station to a very great extent. Some steps have already been introduced by the railway authorities by shifting some origin and destination points to the Yeswanthapur railway terminal.

### **Image of the Emerging City**

Bangalore, a city with almost 500 year old history, has several images - garden city, air-conditioned city, city of scientific and technological institutions, and now IT and BT city. Hence, let us not allow Bangalore to become one more 'urban monster' with its on-going rapid urbanization, haphazard growth and poor management which are being experienced in the metros of several developing countries. Instead, one should carefully understand and appreciate the city's dynamism and potentialities for its beckoned development path through its changing capabilities (trade, industry, science and technological institutions; and IT and BT) according to the changing scientific and technological advancements for development. Therefore, instead of the crazy idea of conversion of Bangalore into Singapore, the policy makers and urban planners should respect the location-specificity and capabilities of the city of Bangalore and promote its growth and development if not as an 'ideal city' which means 'a city without slums, traffic congestion, house and ground congestion, air and water pollution, and with population growth matching the requirements like housing, health, education, and the people living in an attractive urban environment at a cost which a city can bear', but, 'as a city of profound aesthetic and environment culture with a balanced urban ecosystem in terms of land use, infrastructure and human beings belonging to various socio-economic strata'.

It is unfortunate that the emerging hi-fi city like Bangalore is yet to have a well developed civic centre consisting of a vast open space and exclusive shopping, recreation and religious discourse centre

which is free from all sorts of traffic nuisance to meet the multi-purpose needs of all sections of society. Such a civic centre would be the place where citizens can spend their time freely. For a city like Bangalore with the proposed huge area of 741 sq. kms and population of about 8 million, such a recreational centre is essential to maintain the ecology of the city and its vast regional setting. A well-planned civic centre may be established with a thorough redevelopment of the existing Cubbon Park, Majestic and City Market areas including the vast area under the Race Course. Similarly, Bangalore, which is also known as the knowledge centre, may be developed as a city of conferences with adequate infrastructure to hold several international and national conventions of United Nations/ World Bank and similar multi-national conferences. Such an infrastructure development can be a very good asset to boost Bangalore as a city of conferences and seminars for the entire country and outside, in addition to its current popularity as IT and BT Centre. However, all these infrastructure need to be developed with global standards after a thorough planning.

Hence, the future city of Bangalore should look like, a city with a balanced vertical and horizontal growth having greenery all around interspersed with well planned self-contained residential neighborhoods, infrastructure and services with minimum travel needs. Since, any city for that matter cannot function alone in isolation with its immediate region, Bangalore should be developed along with its region to maintain the city-region symbiosis. The functional reality of the region as an agricultural region is disrupted due to imposed demand by real estate. As a result, rural inhabitants of the region are forced to leave their traditional occupation of agriculture, and settle down as 'so called urban residents' with a hope that some policy interventions will provide them a decent future. In fact, Bangalore is already experiencing this problem more seriously. May be as a component of the city-region development, the government of Karnataka has also proposed to develop a few satellite towns around Bangalore probably with an intention to siphon-off the existing as well as future population pressure

likely to experience by the city. However, these satellite towns should be planned as self-contained units with least dependence on the city which is restricted to specialised commercial, health and administrative services. Hence, for the planned development of the city of Bangalore and its region together, the existing planning institutions like BDA and BMRDA have to work together with proper coordination to achieve the sustainable city-region development. Ultimately, such a dream city with a well-balanced city-region system is possible only with the combined efforts of dedicated stake holders such as urban planners, policy makers, non-government organizations, and more significantly the citizens of Bangalore.

## References

- Govt. of India (1991), *Census of India, Town Directory of Karnataka*, New Delhi
- Govt. of India (2001), *Census of India, Provisional Population Totals*, New Delhi.
- Govt. of Karnataka (2007), Gazette Notification, Urban Development Secretariat, Government of Karnataka, Bangalore.
- Govt. of Karnataka (n.d), Directorate of Information Technology, Bangalore: Government of Karnataka.
- Govt. of Mysore (1968), *The Outline Development Plan for the Bangalore Metropolitan Region*, Bangalore: Government of Mysore.
- Heitzman J. (2004), *Network City: Planning the Information Society in Bangalore*, New Delhi: Oxford University Press.
- Nair Janki (2005), *The Promise of the Metropolis: Bangalore's Twentieth Century*; New Delhi: Oxford University Press.
- Ramachandran, H (1985), *Studies on Urban Environment of Bangalore: Greening of A Metropolis: An Analysis of Open Spaces in and around Bangalore*, Bangalore: Ecological Economics Unit, Institute for Social and economic Change( mimeo).
- Rao, V.L.S. Prakasa and V.K. Tewari (1979), *The Structure of An Indian Metropolis: A Study of Bangalore*, Bombay: Allied.
- Sastry, G.S. (1988) Bangalore Metropolitan Transportation Planning: Some Observations and Suggestions', *The Indian Geographical Journal*, 63(1):10 – 21.
- Sastry, G.S. (1994), *Urban Retail Trade Structure: A Study of Bangalore*; A Ph.D thesis for Doctoral Degree in Development Studies - Doctoral Degree Awarded in 1994, Mysore: University of Mysore.
- Sastry, G.S. (2006), 'Urbanization in an IT Prominent State of India: Patterns, Issues and Policy ' in *Sustainable Development and the Indian Economy: Issues and Challenges*; Sailabala Debi and V. B. Annigeri (eds.); New Delhi: Serials Publications.
- Sastry, G.S. (2007), Issues of Urban Water Management: A Study of Un-accounted for Water In Bangalore, *The ICFAI Journal of Urban Policy*, 2(1):7-28.
- The Times of India (2006), Greater Bangalore, September 5, 2006, Bangalore Edition.
- The Times of India (2006), Expanding New Horizons, November 4, 2006, Bangalore Edition.
- Websites  
www. Bangalore IT, 2007  
www.demographia.com; 2007.  
www. History of Bangalore, 2007  
www. National Capital Region, Delhi, 2007