Until about 1980, Bangalore was a slow-moving city following the rhythm of old trading networks, retired civil servants, army personnel, academics, and landed gentry. The roads were clean, wide, and practically free of CO₂-emitting vehicles. It was a green city. All this changed slowly and then suddenly the Garden City of yesteryears transformed into a Hi-Tech City within a span of just two decades. Invaded by information technology giants like Infosys, Wipro, and a host of others from India and abroad, the urban culture and structure of the city changed. The city is on the move and looking forward to a newer and more vibrant future.

Then suddenly, in 2006 it decided to reinstate its original name ‘Bengaluru’, from its anglicised version Bangalore. On 11 December 2005, the Government of Karnataka announced its intention to rename Bangalore as Bengaluru. A year later, on 27 September 2006, the Bruhat Bengaluru Mahanagara Palike (BBMP) resolved to follow the suggestions of the state government in this regard. The State Government officially implemented the change of name from 1 November 2006, though the Union Home Ministry is yet to clear the change.

As the city grew in population, it sprawled in its hinterland devouring surrounding villages, and further straining its already overburdened infrastructure like roads, drainage, power, and water supply. To improve mobility, roads were widened, a mass transit system was
introduced and new flyovers were constructed. The new international airport, necessary as it is for a city gaining international stature, has devoured a massive chunk of land without adequate recompense for the displaced. The same is the case with highways that make Bangalore the prime city of Karnataka. None of these and other developments were, however, related to a vision of the city of the future.

Karnataka is one of the fastest urbanising states of India; 40 per cent of its current (2001) population is urban as against 27.80 per cent in the country as a whole. However, most of its urban centres are in the southern half of the state. When the states of India were reorganised on linguistic basis in 1956, Mysore state, renamed as Karnataka in 1973, was enlarged by adding Kannad-speaking areas of the existing states of Bombay in the north, Hyderabad in the east and Madras in the south. It took some time for the newly incorporated districts to pick up developmental momentum and to be at par with the southern districts, with the erstwhile princely state of Mysore as its core. Even today, northern Karnataka is relatively less urbanised.

Bangalore constitutes the apex of the urban hierarchy in Karnataka. Its rank among the cities of India was sixteenth in 1947; since 1981, it occupies the fifth position. If the trends of the recent past continue, it is likely to overtake neighbouring Chennai in the next two decades to become the fourth-largest metropolis of India. The questions that arise are: Is this speed and pattern of growth desirable? Can this growth rate continue without impinging adversely on the quality of life of the people? Can it retain its image of a Garden City, City of Flowers and Foliage, Pensioners’ Paradise, Low-rise City, and so on? Or, would it soon become a concrete jungle forcing its citizens to adjust their lives with the requirements of a growing city, rather than the city growing in tune with the rhythm of life people choose?

This chapter looks into these and many other related questions and tries to chart a sustainable development scenario for Bangalore.

EVOLUTION OF BANGALORE

The earliest reference to the name ‘Bangalore’ is found in a ninth century rock edict extolling the virtues of a warrior. The inscription found near Begur (a small place near present day Bangalore) refers to ‘Bengaluru’ as a place where a battle was fought in 890. It states further
that the place was part of the Ganga Kingdom until 1004 and was known as ‘Bangaval-uru’, the ‘City of Guards’. Thus, the city is about 1000 years old. Well-known historian R. Narasimhachar has referred to this inscription in Volume 10 of his Epigraphia of Carnatica. The inscription has remained neglected and no effort has been made so far to preserve it.

Bengaluru is said to be the shortened version of ‘Benda Kalooru’, or ‘city of cooked beans’. According to a folk tale, Veer Ballala II, the 11th-century Hoyasala king, while on a hunting expedition, lost his way in the forests that abounded the area now occupied by the city. Tired and hungry, he came across the hut of a poor old woman who was kind enough to serve him boiled beans. The grateful king named the place ‘benda-kaal-uru’ which literally means the ‘town of boiled beans’. In course of time, benda-kaal-uru became ‘Bangalûru’.

After centuries of the Western Ganga rule, the area was captured by the Cholas in 1024. In 1070, it passed on to the Chalukya–Cholas, and in 1116 to the Hoysala Empire. The city of Bengaluru was founded by Kempe Gowda I, a vassal of the Vijayanagara Empire; he built a mud-brick fort and a Nandi Temple in the proximity of the modern city in 1537. Yelahanka, now a part of the town, is one of the oldest towns of Karnataka. It was the hometown of Kempe Gowda and was referred to as ‘gandubhûmi’ or ‘Land of Heroes’.

The fort town was divided into ‘petes’. It had two main streets – Chikkapete Street ran from east to west, and Doddapete Street, from north to south. The Doddapete Square, now the heart of Bangalore was the point where the two streets crossed each other. Kempe Gowda II, the successor of Kempe Gowda I, built four towers to mark the boundary of the city. During the Vijayanagara rule, the city was also referred to as ‘Devarâyanagara’ and ‘Kalyânapura’.

After the fall of the Vijayanagara Empire, Kempe Gowda III was defeated by a combined army of Bijapur and Shahaji Bhonsle in 1638. Bangalore was given to Shahaji as a Jagir. The arrangement did not last long. In 1687, Kasim Khan, a Mughal general, defeated Ekoji, the son of Shahaji, and sold Bangalore to Chikkadevaraja Wodeyar (1673–1704) of Mysore for 300,000 rupees. On the death of Krishnaraja Wodeyar II in 1759, Hyder Ali, commander of the Mysore Army, proclaimed himself as the ruler of Mysore. Hyder Ali’s son Tippu Sultan was defeated and killed in the Fourth Anglo-Mysore War in
1799. The British retained the Cantonment and returned the Bangalore ‘pctç’ to the Maharaja of Mysore. The capital of the kingdom of Mysore was relocated from Mysore to Bangalore in 1831.

The British took over the administration of the city in 1831. The first public hospital was inaugurated in 1835 and construction of the railway line, linking the city with Chennai, began in 1851. The Central College came up in 1858. In the early 1880s, the British decided to constitute two municipal councils, one for the cantonment (1862), and the other for the city proper (1864). Two years later in 1866, the Cubbon Park, a landmark of Bangalore and an office complex that now houses the High Court of Karnataka, was built. Construction of the Bangalore–Madras railway in 1864, the Bangalore–Mysore rail link during the 1870s, and the Bangalore Palace in 1887 contributed immensely to the rapid growth of the city.

Bangalore instituted a centralised water supply system in 1896. It was followed by telecommunication service in 1899. Soon in 1906, Bangalore became the first city in India to have electricity drawn from the hydroelectric plant situated at Shivasamudram. As a part of the Silver Jubilee celebrations of the rule of Krishnaraja Wodeyar IV in 1927, a number of new facilities including parks, public buildings, and hospitals were launched. In response to the emergence of the city as a centre of trade and commerce, the Bangalore Chamber of Commerce was established in 1915. Consecutively, to meet the growing demand for water, the Tippegowdanahally reservoir was constructed in 1933. Bangalore was connected by air in 1937.

Independence of India in 1947 brought new opportunities to the city. The princely state of Mysore merged with the Indian Union, and Bengaluru became the capital of the new State of Mysore headed by the Maharaja of Mysore as its Raj Pramukh. Vidhana Soudha, the majestic building that houses the offices of the state government was built in 1955. The following year (1956), the State Reorganization Commission brought all Kannada-speaking areas of the states of Mysore, Madras, Hyderabad, and Bombay together to form the new and enlarged state of Mysore. Bangalore was declared the capital of the new state. This change enhanced the economic and political status of the city. The population of Bangalore grew rather fast during the 1941–51 and 1971–81 decades. By 1961, Bangalore, with a population of 1.20 million, had become the sixth-largest city in India. During 1971–81,
the manufacturing base of the city expanded further to spur real estate development on an unprecedented scale. It was during this period that the colonial bungalows of Bangalore with large open spaces around were converted into multi-storied apartments.

The decade of the 1970s heralded a new era in the development of the city. A number of high-tech industries set up small and medium scale offices and production units. These units later transformed into global players. During the 1980s, a number of technology parks were added to the landscape of the city, attracting a number of high-tech industries. Bangalore became a major destination for software giants. The growing importance of Bangalore resulted in a number of central government establishments too. A number of industrial undertakings of the central government, like the Hindustan Aeronautics Limited (HAL), were set up in the city; private companies were soon to follow. In due course, Bangalore became an industrial city par excellence. The state of Mysore was renamed as Karnataka in 1973. Texas Instruments was the first multinational organisation to set up its base in Bangalore in 1985. Other information technology companies followed suit to convert Bangalore into the Silicon Valley of India.

As the city grew in size and population, urban management became complex and beyond the scope and capacity of the municipal authorities. To cope with the emerging problems, a local planning authority was set up in 1964. The University of Bangalore was established the same year. In order to satisfy the growing demand for urban and regional planners, the University of Mysore established an Institute of Development Studies (IDS) headed by an acclaimed regional planner as its director. The IDS launched a number of innovative programmes to train planners and development specialists. The post-graduate course in Urban and Regional Planning launched in 1972 was the first such professional course in South India. There were courses leading to post-graduate degrees in development planning, agricultural marketing, and micro-level planning. To further strengthen social science research in the state, the Institute of Social and Economic Change (ISEC), and the Indian Institute of Management (IIM) were set up at Bangalore. The Bangalore Development Authority (BDA) came into being in 1976.

To accommodate all these new developments, Bangalore expanded laterally in the periphery necessitating the establishment of the
Bangalore Metropolitan Regional Development Authority in 1987. As years rolled on, the city became the centre of Information and Communications Technology (ICT) and assumed the status of the Silicon Valley of the East.

Much of Bangalore’s growth has been driven by the ICT. The United Nations Development Programme (UNDP) has ranked it as the fourth-best technological hub in the world. Among contributing factors were the presence of other capital goods industries; grant of industrial status to the city to qualify for lower electricity tariff, priority in sanctioning power connections, exemption from power cuts, and simplified procedures for permission to use captive diesel generator sets.

The state government also put in place policies that supported the growth of the IT sector. For instance, Karnataka was the first state in the country to announce an IT policy in 1997. This was followed by the Mahiti-Millennium IT Policy in 2000 with the aim ‘to maintain the pre-eminent position of both Bangalore and Karnataka in the field of Information Technology.’ Apart from granting fiscal incentives, the chief minister S.M. Krishna in 1999 set up the Bangalore Agenda Task Force (BATF), headed by the then Infosys managing director Nandan Nilekani, to ‘involve private sector in planning for and providing infrastructure for citizens.’

‘Metropolitan Bangalore’, says the well known urban planner L.R. Vagale, ‘with its polyglot and variegated culture, is tending to become a mega-polis. It abounds in industrial complexes, commercial centres, teaching and training institutions, administrative campuses, and new residential layouts. Its skyline, low-lying as it is, is pierced by numerous high-rise buildings. The city, known for bungalows, villas, and detached houses with private gardens, is now filled up with residential apartments, and group housing. Overgrowth, aimless sprawl, and disorder characterise its rapid and random growth. In recent years, Bengaluru has emerged as India's electronic, aerospace and high-tech centre, and as a preferred venue of national and international conferences.’ At the same time its physical and social health is deteriorating. Often, it is branded as Polluted City, Oppressive City, Pensioners’ Nightmare, High-Rise City, and Expensive City.

The spatial expansion of the city, ever since its inception in 1537, is illustrated in Figure 8.1.
DEMOGRAPHIC CHANGES

Bangalore was a city of 144,500 inhabitants (61,200 in the city and 83,300 in the Cantonment) in 1872, the year when the first Census of Population was organised in India. By 1921, the city overtook the Cantonment as its population increased, but the Cantonment being a military town remained constant. Its population almost doubled during the decade 1941–51 (94.10 per cent growth). Bangalore became a million plus city in the early 1950s and by 1961 it had 1,203,000 inhabitants. During the decade 1971–81, its population increased by 75.6 per cent. Since then its growth rate is close to 40 per cent per decade (3.8 per

Fig. 8.1: Bangalore: Urban Expansion (1537–2001)

cent per annum), which, when translated into absolute numbers of people added each year, is quite high especially because the infrastructure and civic amenities of the city did not expand proportionately (Table 8.1 and Fig. 8.2).

Table 8.1: Bangalore: Area and Population (1871–2011)

<table>
<thead>
<tr>
<th>Year</th>
<th>Area in sq km</th>
<th>Population</th>
<th>Decadal variation (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1871</td>
<td>—</td>
<td>144,480</td>
<td>—</td>
</tr>
<tr>
<td>1901</td>
<td>144</td>
<td>163,091</td>
<td>-9.6</td>
</tr>
<tr>
<td>1911</td>
<td>156</td>
<td>189,485</td>
<td>16.1</td>
</tr>
<tr>
<td>1941</td>
<td>181</td>
<td>410,970</td>
<td>32.1</td>
</tr>
<tr>
<td>1951</td>
<td>193</td>
<td>786,343</td>
<td>91.3</td>
</tr>
<tr>
<td>1961</td>
<td>255</td>
<td>1,206,961</td>
<td>32.1</td>
</tr>
<tr>
<td>1971</td>
<td>285</td>
<td>1,664,208</td>
<td>53.5</td>
</tr>
<tr>
<td>1981</td>
<td>366</td>
<td>2,921,781</td>
<td>75.5</td>
</tr>
<tr>
<td>1991</td>
<td>466</td>
<td>4,130,288</td>
<td>41.4</td>
</tr>
<tr>
<td>2001</td>
<td>531</td>
<td>5,686,844</td>
<td>37.7</td>
</tr>
<tr>
<td>2011 (Projected)</td>
<td>708</td>
<td>7.5 million</td>
<td>—</td>
</tr>
</tbody>
</table>

Source: Census of India, 2001, and Master Plan, Bangalore, Bangalore Development Authority

With the increase in the area of the state of Mysore in 1956, the population of Bangalore as the capital of the enlarged state increased during 1951–61. Governmental activities expanded as did business, industry, and social services. To be closer to the centre of political power, people from newly added areas in the north, north east, and south came and settled down in the city. Both public and private sector industrial units that came to the city in large numbers brought with themselves managers, technicians, and others. Those who came rarely returned. There was another factor that boosted the population of the city during 1971–81. The area of the city corporation was increased; a number of villages and towns in the periphery were brought within its fold. Bangalore thus became an urban agglomeration.

To begin with, the city expanded linearly along the main highways leading to Mysore in the south, Chennai in the east, Hubli in the north, and Mangalore in the west. Then began the filling-in process when entrepreneurs bought huge chunks of agricultural land to set up new industrial plants and the colonisers built HIG, MIG, and LIG residential colonies to house the new entrants to the city. While the periphery witnessed horizontal growth, the inner city experienced vertical growth.
Today, the Bangalore City Corporation (BCC) consists of 100 wards, while the Bangalore Metropolitan area boasts, in addition to the BCC, 7 other City Municipal Councils and the Bengaluru Metropolitan Region has 12 urban settlements within its fold. The total area covered by these development agencies is 8,005 sq km.

Bangalore is now the primate city of Karnataka; no other city comes close to it in terms of population or contribution to the GDP and employment of people. It is no longer a city of Karnataka alone; it is the IT hub of India. 10.5 per cent of the total population and 31.5 per cent of the urban population of Karnataka lives in this metropolis. It is seven and a half times larger than Hubli-Dharwar, the second largest city of the state. In the economic sphere too it plays a dominant role. 40 per cent of the total medium- and large-scale industries and 20 per cent of the small-scale industries of the state are located in this city. It accounts for 54 per cent of the total capital investment, 60 per cent of the total petrol consumption, 32 per cent of the power consumed, 55 per cent of the total commercial tax collection, and 40 per cent of the money disbursed by the Karnataka State Finance Corporation. The only other state, which has the size distribution of cities similar to Karnataka, is West Bengal where Kolkata dominates the urban scene.

No wonder that Bangalore holds immense attraction to investors from all over the world. No matter which sector one takes into account, (industry, trade, commerce, transportation, information technology, or education), it has become one of the main destinations of investors in India. Success begets success as long as it is backed by a well-oiled and ever-dynamic urban management system. As long as the diseconomies of scale do not mar its attraction, the city would continue to grow. There is lurking fear, however, that diseconomies have started disfiguring and distorting this beautiful city. As early as 1995, Vagale remarked, ‘Bangalore has become a vast, amorphous and complex urban agglomeration, losing the human scale, with a depressing physical, social and health environment.’ It has reached the threshold of tolerance. Unless remedial steps are set to motion sooner than later, the pull of the metropolis will weaken, and a stage of degeneration will set in. People have far more choices today than earlier. The secondary cities are growing in number and size; they are retuning their infrastructure to attract investors and professionals. Moreover, the days of people sticking to their ancestral and parental homes are now gone. They look for new opportunities no matter where they are.
It is especially so with regard to footloose IT industries and associated high-tech professionals and workers.

**INTERNAL STRUCTURE**

Bangalore is an expanding city. This is apparent from the fact that the area covered by the Bangalore Municipal Corporation (BMC) is 531 sq km, but that by the Bangalore Development Authority (BDA) is more than double of it (1280 sq km), and that by the Bangalore Metropolitan Regional Development Authority (BMRDA) more than six times (8005 sq km) of the area of under the BDA. The spatial expansion has occurred in response to increase in population. Naturally then the land use pattern of the city has also changed. In the MCC area it has oscillated during the last five decades although not uniformly in all directions. The residential land use declined in the 1980s and 1990s and then picked up again to reach the 1960s level. The share of commercial land has more or less remained unchanged. Same is the case with the open space including parks. Land under industrial uses has declined from 12.50 per cent in 1963 to 6.90 per cent in 2001, indicating a change in the production processes; that under unclassified uses has declined from 19 to 5.3 per cent. Opposite has been the case with land under public and semi-public uses which doubled from 6.3 per cent in 1963 to 12.2 per cent in 2001, and that under transportation increased from 8.8 per cent to 24.3 per cent during the same period (Table 8.2).

**Table 8.2.** Bangalore: Changes in Land Use Pattern (1963–2011) (Percentage of total land)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Residential</td>
<td>42.4</td>
<td>28.4</td>
<td>34.8</td>
<td>40.4</td>
<td>43.1</td>
</tr>
<tr>
<td>2. Commercial</td>
<td>2.2</td>
<td>3.1</td>
<td>2.4</td>
<td>2.7</td>
<td>2.9</td>
</tr>
<tr>
<td>3. Industrial</td>
<td>12.5</td>
<td>9.7</td>
<td>7.2</td>
<td>6.9</td>
<td>6.8</td>
</tr>
<tr>
<td>4. Public &amp; Semi-public</td>
<td>6.3</td>
<td>12.5</td>
<td>9.2</td>
<td>12.2</td>
<td>13.8</td>
</tr>
<tr>
<td>5. Parks and Open Spaces</td>
<td>8.8</td>
<td>10.4</td>
<td>7.5</td>
<td>8.2</td>
<td>8.7</td>
</tr>
<tr>
<td>6. Transportation</td>
<td>8.8</td>
<td>25.7</td>
<td>31.5</td>
<td>24.3</td>
<td>20.7</td>
</tr>
<tr>
<td>7. Unclassified</td>
<td>19.0</td>
<td>11.2</td>
<td>7.6</td>
<td>5.3</td>
<td>4.0</td>
</tr>
</tbody>
</table>

*Projected

*Source: Compiled from Department of Town Planning, Government of Karnataka.*
Figure 8.2 depicts the proposed Land Use for 2015 prepared by French Consultants invited by the Bangalore Development Authority to help them tide over the problems the city is likely to face in future. This demonstrates the emerging land use pattern, imminent in the near future.

HOUSING IN BANGALORE

Housing shortage is a major problem in Bangalore. In 1981, the housing stock of the city was 472,000 units while the demand stood at 523,300 units, registering a shortfall of 51,300 units. The present (2007) shortfall...
may exceed 100,000 units. To cope with increase in population, Bangalore needs at least 30,000 new units each year at the rate of 7–10 new units per 1,000 population, but not more than 5 units per annum are added to the housing stock. Most of the new units belong to LIG and MIG categories. They are built for self-occupation.

The BDA and Karnataka State Housing Board (KHB) did try to provide affordable housing for the lower-middle class and low-income groups, but their overall performance in this regard has been far below expectation. Not even one-third of the demand for housing has been met by them. The BDA is often accused of becoming a glorified land development agency and KHB neither has the resources, nor the technical competence to step in boldly. It does not, however, mean that their contribution to housing needs of the city has been negligible.

One of the major implications of the shortage of housing stock has been the proliferation of slums and squatter settlements. Slums have become a ubiquitous phenomenon in the urban landscape of India. Bangalore has attracted many migrants from Andhra Pradesh and Tamil Nadu, besides from other parts of Karnataka. Initial migration stream consisted of poor agricultural labourers from rural areas. Since the poor constitute a major vote bank, the state government, as elsewhere in the country, has taken a very lenient view of the illegal occupation of space in the city. They built temporary shelters wherever land was vacant. In 1981, there were 400 slums in the city.

According to the 2001 Census, Bangalore has 733 officially identified and registered slums with a total population of 350,000. This works out to be 8 per cent of the total population of the city. The figure is, however, far from the real one; even by conservative estimates, nearly 20 per cent of the population of the city lives in slums. It is also admitted that the Slum Clearance Board and City Corporation have improved the physical environment of the slums to a great extent; yet, the overall picture remains depressing and insoluble. It is of little comfort to know that the situation is not as bad as in Mumbai, Delhi, and Kolkata. Bangalore has fewer slums and fewer people living there as compared to other mega cities.

Slum improvement and rehabilitation programmes were launched as early as the 1960s but without making much headway, partly because the issue gets highly politicised and partly because the number of new comers at any time is larger than the number rehabilitated.
Nearly 40 per cent of the slum dwellers fall in the category of informal workers; they contribute immensely to the urban economy. They have to live close to the posh residential colonies and industrial areas. To shift them far away from the MCC is neither easy nor practicable. Many of the slums are in grips of the land mafias.

METROPOLITAN GOVERNANCE

The quality of life in a city depends to a great extent on the efficiency and effectiveness of the local governance system. The local bodies in India traditionally had only two functions: water supply, and cleaning and scavenging. As the cities grew in size, they were no longer able to perform even these functions satisfactorily. To manage large cities like Bangalore, city governments have to be more democratic, empowered, and efficient. Unfortunately, our cities grow and change faster than the city governments and a stage comes when everything becomes a mess. By the time the city governments understand what went wrong, a lot of damage is already done. Bangalore is no exception to this.

The Bangalore Municipal Corporation (MCC) or Bengaluru Mahanagara Palike (BMP) is not starved of finances to perform its obligatory service and development functions. It, however, suffers from four main drawbacks: over-centralisation in decision-making; lack of perspective and innovative planning; lack of co-ordination among different authorities; and financial mismanagement. The 74th Constitution Amendment Act of 1992 has very little impact on the working of local bodies in India. The Bangalore Mahanagara Palike (BMP) is innovative in some respects like the issue of Municipal Bonds to raise finances, arrangements for Solid Wastes Disposal, and introduction of changes in Building Regulations, but it has failed in preventing unauthorised building activities and enforcing its own rules and regulations. The Bangalore Mahanagara Palike (BMP), Bangalore Development Authority (BDA), and Bangalore Metropolitan Region Development Authority (BMRDA) have overlapping jurisdictions; they often work towards cross-purposes.

Decentralisation of planning and development is the need of the hour. The idea was floated by the National Commission on Urbanization in the mid-1980s. The Commission identified two types of cities – National Priority Cities and State Priority Cities – for selective development. Unfortunately, this was not taken up in right earnest by
the state governments and the idea of decentralisation failed to move further. Mumbai, Kolkata, and Chennai did make some progress in this regard, but Bangalore has lagged behind. The Structure Plan of the city does not even suggest measures to decentralise the activities or to relocate the industries and other activities. Hence, most of the activities tend to get located within 15 km of the heart of the city. The Industrial Policy 2006 rolled out by the present government is silent on metropolitan decentralisation. The Policy merely identifies the Tier II cities for development.

One of the options to decongest the metropolis is development along the major corridors taking advantage of the rail and roads linking the city with other cities within and outside the state. The BMRDA has now woken up to harness this potential. It has started building outer peripheral roads and new townships along them to decentralise various urban functions and activities (Fig. 8.3).

Fig. 8.3: Bangalore Metropolitan Region

Source: Bangalore Metropolitan Authority.
URBAN INFRASTRUCTURE

The urban infrastructure of Bangalore used to be one of the best in the country. Even today, it is far superior to that of many large cities of India. However, it is quite inadequate when seen in the light of the role it plays in the national economy and the new future it has carved out for itself in the Hi-Tech industry. To be the Silicon Valley of the East, it must recreate itself and match its infrastructure with that of the Silicon Valley of California.

Traffic and Transport

Rapid and haphazard growth of Bengaluru during the last two decades impacts its traffic and transportation problems immensely. Today, the roads of Bangalore are highly congested and their maintenance is not up to the level of a Hi-Tech metropolis. The number of vehicles on the roads has gone up several times (Table 8.3). In November 2006, Bangalore had 2.80 million registered vehicles, registering a four-fold increase since 1991–92 when the number of vehicles was just 680,000. Of these, only 15 per cent of the vehicles on the road are four-wheelers; the rest are two-wheelers. Bangalore accounts for 40 per cent of the total vehicles registered in Karnataka state.

Table 8.3: Bangalore: Number of Registered Vehicles (1985–2003)

<table>
<thead>
<tr>
<th>Year</th>
<th>Two Wheelers</th>
<th>Cars and Cabs</th>
<th>Others</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>195,210 (67%)</td>
<td>58,971 (20%)</td>
<td>34,288 (13%)</td>
<td>288,466 (100%)</td>
</tr>
<tr>
<td>1990</td>
<td>415,854 (76%)</td>
<td>85,037 (18.6%)</td>
<td>44,850 (8.4%)</td>
<td>545,741 (100%)</td>
</tr>
<tr>
<td>1995</td>
<td>594,639 (73.9%)</td>
<td>120,103 (15%)</td>
<td>89,634 (2.1%)</td>
<td>804,376 (100%)</td>
</tr>
<tr>
<td>2002</td>
<td>1,183,752 (74.1%)</td>
<td>259,001 (16.2%)</td>
<td>153,805 (9.7%)</td>
<td>1,596,558 (100%)</td>
</tr>
<tr>
<td>2003</td>
<td>1,388,055 (74.3%)</td>
<td>277,569 (14.9%)</td>
<td>202,748 (10.8%)</td>
<td>1,869,372 (100%)</td>
</tr>
</tbody>
</table>


Road Network

The road network of Bangalore needs expansion and re-articulation to meet the growing circulation needs of the metropolis. Normally, a metropolitan city should have 20–25 per cent of its area under roads. In case of Bangalore, it is only 17 per cent. In the absence of any natural barrier, it has expanded all around. The transport-network too follows
the radial pattern. As stated earlier, the city began with two foci: City Market (Pete) and Russell Market (Cantonment). They are now merged to form a single well-knit city. With commercial activities located within 5 sq km of the core area, the new institutions and industries leapfrog and establish themselves along the main roads linking it with other cities. Thus the present spatial structure of Bangalore is radial-cum-axial. The road pattern is also dictated by the location of economic activities. Nearly 3,000 ha or 7 per cent of the total developed land is under industrial uses.

While the scope for widening roads within the inner city is limited, commercial activities have increased bringing more people on roads. Roadsides have been converted into parking spaces making it difficult and hazardous for cyclists and pedestrians. Bangalore, therefore, has the distinction of registering one of the highest rate of vehicular accidents among the million plus cities of India. Even in 1988, the share of the city in terms of road accidents in the state was 35 per cent. The number of accidents was 5,985; of these, 504 were fatal. The number of fatal accidents per 100,000 populations was 12 for urban India, 80 for Bangalore, 8 for Chennai, and 8.20 for Mumbai.

**Mass Transit System**

The mass transit system of the city is so inadequate that people prefer to use their own cars. The Bangalore Transport Service (BTS), which operates city buses, is unable to cope with the traffic mainly because of the shortage of vehicles. The city desperately needs a Metro Rail system. It is heartening that the success of Kolkata and Delhi Metros has inspired the authorities in Bangalore to plan for it and put some sections of it into operation by 2011.

The city is surrounded by a number of institutions of regional and national importance like the Dairy Farm, Silk Farm, Agriculture University, Air Field and Air Base Stations, Bangalore University, and National Parks. The major roads linking it are NH 4, NH 7, and new NH 209. The entire stretches of national highways serving the city have been upgraded with four lanes with grade separators. The city roads providing links to these Highways are yet to achieve uniform width. They are all-purpose roads catering to heterogeneous traffic. Therefore, mass transportation by buses cannot be solely depended upon. The present network is not conducive to smooth traffic flow.
Bangalore is also a major railhead; practically all important cities of the country are connected to Bangalore by rail. Construction of the Metro Rail would facilitate smooth flow of not only internal traffic, but also the traffic to and from the city. At present, nearly 45 per cent of the total population of Bangalore depends on city bus services operated by the Bangalore Metropolitan Transport Corporation which serves the city as well as its region. The Corporation has 24 bus depots with a total fleet strength of 2,200 carrying nearly 2.50 million passengers over a route-length of nearly 25,000 km each day. In the last 10 years, the total passengers carried, fleet and the route length have gone up by almost 80 per cent. With the growth of vehicular traffic and commuting population, single mode mass transit is not only inadequate but also unsatisfactory.

Realising this, the Government of India has proposed the introduction of Metro Rail in the city under its Mega City Scheme. After prolonged discussions and weighing alternatives, the state government and central government decided to launch the project in November 2006. When completed in 2011, it would ease the road congestion, as has been the case with Delhi and Kolkata. Nearly 32 km of Metro line both underground and surface, is proposed to link residential, commercial, industrial, and institutional areas. It is proposed to carry 1.60 million passengers each day. Along with the Metro, other improvements like road widening, new flyovers and underpasses are being undertaken to reduce congestion on road, bring down pollution levels, and ensure smooth flow of traffic.

Water Supply

Until 1970, Bangalore got its water supply from two small reservoirs located in the Arkavathi river basin. Unprecedented growth of the city during 1971–81 required the augmentation of this source. It had to opt for a more reliable supply and the only major source was the Kaveri River, about 100 km further south. The city now gets an assured supply of about 800 ml per capita daily (mlpcd). It is supplemented by water drawn from 6,000 public and more than 70,000 private bore wells. Per capita water supply varies from 100 to 110 mlpcd, which is quite satisfactory compared to other metros. However, the fringe areas of the city do not get assured supply of water. Nearly 1,280 settlements depend on bore wells and tanks. In these areas, the quality of water is
not satisfactory; 62 per cent of the inhabitants are affected by excess fluoride, nitrate, and brackishness. The State of the Environment Report and Action Plan-2003 has identified Bangalore district as one of the hotspots for drinking water supply.

The cost of bringing Kaveri water to the city is high. As the city grows further, the demand as well as the cost of drawing water from a distance of several kilometres would further increase. Then there is a limit to which Kaveri can be depended upon. Being an inter-state river, there are limits to which water can be drawn from it. Kaveri water is also needed for irrigation both in Karnataka and Tamil Nadu.

**Drainage**

As the city grew, new structures emerged often ignoring the natural drainage and sources of water supply. A wide network of lakes formed an important source of water in Bangalore; they are now either repositories of sewage and garbage or have been filled up to construct high-rise residential buildings. The wetlands and open areas outside the city met the same fate. It is, therefore, not surprising that Bangalore experienced major floods a few years back; it brought the city to a standstill and delayed many of the newly launched development schemes. More such floods are likely to visit the city in the years ahead.

**Sewerage System**

‘Bangalore Water Supply and Sewerage Board’ manages the sewerage system of the city. The terrain of the city is quite favourable for gravity flow of liquid waste and hence it is relatively less expensive to operate it. The city has three drainage basins and each basin has two or more treatment plants, the total number being seven. About 80 per cent of the sewage goes out as liquid waste to the treatment plants. Thus, one of the important urban infrastructures of Bangalore is fairly satisfactory and well-managed. However, any further expansion of the city particularly in the periphery would require new facilities and fresh investment.

**Solid Waste Disposal**

Bangalore City Corporation has initiated a number of schemes to collect much (80 per cent) of the solid waste of the metropolis and to transport the same to the sites maintained by Karnataka Compost Development
Corporation for composting. The critical issues, which need attention of the BMC, are: 100 per cent collection of wastes, prevention of ground water and air pollution, and health hazards caused by the wastes dumped in low-lying areas. Nearly 72 per cent of the solid waste from all sources can be petrified and used to generate electricity. Of the total wastes collected in Bangalore, paper constitutes 11.6 per cent, dust and ash, 6.7 per cent, non-bio-degradable wastes, 6.5 per cent, and hazardous wastes, 1 per cent. All these wastes have to be segregated at collection points and processed on the spot with the help of modern equipments. Even the hospital wastes which are so hazardous are segregated only at major hospitals. The pollution caused by these wastes has given rise to a number of respiratory diseases including asthma among school-going children.

ECONOMIC BASE

Bangalore has become the IT centre of India; the Silicon Valley of South Asia. Many agencies in Europe and America are transferring jobs to this city. For example, Reuters will get the processing and distribution of information to 327,000 decision makers across the globe, accounting for 90 per cent of its income at this IT metropolis. Thousands of banks, insurance companies, airlines, retailers, and biotech companies are outsourcing their business processes to Bangalore and other places in Asia. ‘To Bangalore’ now means shifting jobs to places where wages are low, workers are disciplined and skilled, and governments are willing to provide subsidised land, tax exemptions, technology parks and other facilities. While in the west outsourcing means loss of jobs, the Bangalore-based software giant Infosys hired 10,000 employees in just nine months in 2004, selected out of a total of 1.1 million applicants.

In medieval times, it was the trade that made cities great; in the twentieth century it was manufacturing located in a few cities of the west to begin with that put the cities on the growth roll. And now, in the post-industrial era, production is globalised and so is the market for goods and services produced. A global city is one that is not rooted in the local; it forms part of a global network of capital and information flows. Historian James Heitzman’s book *Network City* is based on a study of Bangalore. It is like the earlier models of the ‘world city’ or the ‘global city’, and is a result of economic globalisation and
triumphant march of Information Technology. Infosys produced software for 200 of the 500 largest American companies. Naturally, it has developed a formidable political and economic clout. During a visit to Bangalore in 2006 by Austria’s President Fischer, a Social Democrat, the Infosys CEO said, ‘Only because Indian socialism was forced to retreat, could the IT industry flourish the way it did.’ He was right indeed.

However, all that glitters is not gold. Bangalore is set to have close to 10 million people by 2015; its infrastructure is so strained and inadequate that the IT and the business entrepreneurs started looking for alternative locations and the people living here prefer to stay away from the city. Many are moving to the periphery and the poorer among them are being driven into ever-growing slums. According to R. P. Misra, an Urban and Regional planner of India, ‘Bangalore, the ‘Garden City of India’ has become a socially fragmented and geographically divided city; it is a city that is now reeling under its own weight. Traffic moves at snail’s pace; water is scarce, the open space for which the city was known once has shrunk to the minimum, and law and order is at low ebb.”

Neighbouring states of Kerala and Tamil Nadu have started inviting the IT at far lower costs. Infosys has acquired 50 acres of land for a new campus in neighbouring communist-ruled Kerala which is more tax-friendly to capitalist ventures than other Indian states. As Bangalore reaches a plateau, Chennai, Hyderabad and Pune move up to compete with it. However, let us not forget that a vast country like India has scope for many IT hubs like Bangalore. Much depends on how this metropolis competes with others in years to come.

Bangalore still wears the ‘IT crown’ of India. It is quite clear from a steady flow of foreign visitors eager to adopt and adapt the model of an information city that Bangalore is. Among the visitors to the city in recent years are Vladimir Putin of Russia, Prince Philip of Belgium, and leading politicians from Venezuela, Algeria, China, Singapore, Nigeria, and many other countries. The miracle of the Network City is so ‘appealing that one nation has decided to transform its entire territory into an information city; by 2010, the South Korean government plans to cover the nation with a seamless ubiquitous computing network.’ However, with the meltdown in the global economy since 2008, this city too had its share of problems. As the economy picks up again in 2010, Bangalore is back to its agile past.
There are some side-effects of the IT industry which Bangalore must keep in mind. It consumes local resources, but contributes more to the national and global economy. The city has to invest in infrastructure, housing and other facilities to attract more industrial units and related jobs, but the benefits it derives from the IT boom is not commensurate with the cost borne by the city. Bangalore must invest more in social services and spread its newly acquired financial and commercial strength to its region, especially the villages which have almost lost the gram swaraj of Gandhi they enjoyed in the days gone by.

TOWARDS A NEW FUTURE

The 2001 Census returns point to the declining natural growth of Bangalore’s population. Immigration is now the main source of its population growth. Those who come to the city are from other parts of the state as well as from neighbouring Tamil Nadu, Andhra Pradesh, and Kerala. Inter-state migration is becoming more selective and mainly consists of the software engineers, technologists, and business entrepreneurs. The inflow of middle and lower-level computer programmers, operators, and technicians and their dependants is both inter-state and intra-state. Bangalore now also has a good number of overseas engineers and managers. As more foreign firms move to the city, more such foreign employees are likely to be stationed in the city.

Bangalore has the advantage of a salubrious climate, less expensive developed land, and well-developed infrastructure. The growth centres, which come up on all highways emanating from the city to other major cities of the peninsula, offer berth for new industries. The industrial entrepreneurs from Tamil Nadu locate their industries in Hosur, which, until very recently, was a nondescript town just 40 km east of Bangalore on NH 4, though well connected by road and railways. Hosur is a great source of income and employment for Tamil Nadu, but it is Bangalore that bears the brunt of activities. Its civic and housing facilities being woefully inadequate, a majority of its professional residents opt to reside in Bangalore and further add to its infrastructure problems. It is only now that the development authorities have taken into consideration the impact of Hosur on Bangalore and developed new townships in-between the two cities, on the Karnataka side.

Another major corridor is being developed along Tumkur road, north east of the city. The new International Airport is rapidly
transforming the Bangalore–Devanahalli corridor into an industrial-cum-residential zone. Land values in this corridor have gone up almost 10 times in the last ten years. Land speculation is rampant and private entrepreneurs have blocked the land for various Airport and Tourism related uses.

The Bangalore–Mysore Infrastructure Corridor, a private sector initiative, will transform the 110 km of road between the two cities into a huge industrial park. With the conversion of the railway line from metre gauge to broad gauge and doubling of the railway line, the transport link between the two cities has improved enormously. Thus, the Bangalore–Mysore corridor is emerging as a new development corridor in southern Karnataka and the day is not far off when the two cities will merge to form a single megalopolis.

There is a growing realisation that if Bangalore has to retain its status as the city of high-tech and knowledge industry, it must disperse the development over a wider area to relieve the concentration of activities within the urban agglomeration. The growing pressure on its infrastructure has prompted the state government to promote the shifting of some economic activities to the south of the city, i.e. towards Mysore and closer to River Kaveri.

Further, it is proposed to link the Electronic City on Hosur Road (NH 7) in Tamil Nadu, with the Peenya Industrial Area on Tumkur Road (NH 4), and the fast-growing industrial area at Bidadi on the Bangalore–Mysore Highway. Hosur Electronic City houses the world’s leading infotech corporations; the Peenya industrial area is home to more than 2,500 industrial establishments that employ a significant portion of Bangalore’s workforce; and the Bidadi industrial area has some of the largest MNCs such as Toyota (with its car and passenger vehicles factory), General Electric (GE), Coke, and Pepsi (Coke is said to be setting up the largest bottling facility of Asia at Bidadi). Bidadi industrial area is expected to house more than 3,000 large and ancillary industries when fully developed. It will constitute the new Economic Development Corridor (EDC) of Karnataka.

The EDC, by linking the three Growth Centres of south Karnataka, would catalyse the economic growth of the whole region. The travel time from Township I (Bidadi) on the new Bangalore–Mysore Expressway to the Vidhan Soudha (administrative building of the state Government) in downtown Bangalore will be 30 minutes on the grade
separated Link Road; between Mysore and Township I will only be 1 hour when the entire stretch of the expressway is complete; from Township I to the Electronic City at Hosur Road would be around 30 minutes; from Township I to the Peenya Industrial Area on Tumkur Road, just 30 minutes; from Vidhan Soudha to the Hosur Electronic City and Peenya Industrial City will also be approximately 30 minutes.

This development, incorporating the highest and most modern international standards is expected to make Township I the corporate and residential hub of Bangalore. Besides accelerating the economic growth of the region, the project will also help reduce the problem of the commercial traffic on the busy NH 4 and NH 7 (linking Chennai in the southern region to Mumbai in the western region) without crossing downtown Bangalore by providing a fast grade-separated bypass. This would not only save valuable time and energy spent at checkpoints and traffic intersections, but also reduce the environmental pollution in the city, since the entire commercial traffic will no longer enter the metropolis.

Once completed, the project would create a working and living habitat of international standards, essentials for attracting and retaining talent for knowledge-based industries. The wastelands of the region will be converted into green areas. The social benefits for the people of the region would be immense indeed. Bangalore will be decongested and will become cleaner and healthier. Thus, its position as the destination for knowledge-based industries will be refurbished and further strengthened.

Among the other benefits accruing from the projected development scenario would be: creation of employment opportunities, induced economic growth in the region along the corridor, lower rural to urban migration, availability of newer markets to farmers for their produce, better housing and recreational facilities, and access of the rural population to better educational facilities.

For its speedy and systematic development, Bangalore needs among others:

1. A unified Metropolitan Organization within the framework of the Bangalore Metropolitan Regional Development Authority (BMRDA);
2. A perspective Structure Plan envisaging the Metropolitan Development in the next 25 years. All the projects are to
conform to the main objectives of Structure Plan. The Detailed development plans at city level, municipal level and small settlement levels should adhere to the stipulations of the Structure Plan. Each local plan should be examined from time to time to keep it tuned according to the emerging new situations and developments.

3. Today the urban local authorities are more worried about their authority than their responsibilities. A broad framework under Structure Plan and Action Plans at local levels could keep the local bodies more functional as the apex authority would not get involved in routine functions of the local bodies. The Chief Minister should head the Metropolitan Regional Development Authority to guide and monitor the implementation of plans. The chief ministers too would appreciate it, as they prefer to keep an eye on the Metropolitan Affairs particularly because urban land is a crucial instrument of state policy.

4. A strong planning wing of the Metropolitan Regional Development Authority should also be strengthened with a Chief Planner to lead, a few Zonal Planners, and subordinate planning officials to support him. This would not only ensure planned development of the metropolis, but also minimise, if not totally prevent unauthorised developments and unplanned growth.

5. An apex organisation to co-ordinate the activities of sectoral agencies is the need of the hour. As mentioned in the earlier section, Bangalore has a number of separate agencies for water supply, sewerage, electricity, housing, slums improvement, etc. which often work at cross purposes. All the major developments in various sectors should conform to the stipulations made of the Structure Plan.

6. A Metropolitan Planning Committee as envisaged in the 74th Amendment of the Indian Constitution should be appointed to resolve recurring rural–urban conflicts in the Bangalore Metropolitan Region. The Karnataka state has not yet constituted the MPC for Bangalore. The rural resources, particularly land and water, are being alienated for urban use. Often it becomes difficult to find large areas for solid waste management or disposal of industrial effluents as rural people
resist such urban moves. Further, the villages falling within the region should also be the concern of the BMRDA. They should not be left high and dry. Monetary compensation for land acquired from people living in villages for centuries is not enough. They should be educated and trained to stand on their own feet. The MPC should take care of not only those who are coming to Bangalore to invest in industries, but also of those who are being displaced so that the others can live better.

REFERENCES

