CHAPTER 3

BACKGROUND OF THE STUDY:
BANGALORE METROPOLITAN AREA
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3.1 History, Growth and Development of Bangalore

Bangalore is the capital of the state of Karnataka. The city has a 400 year old history. Bangalore has been mentioned in centuries old inscriptions which testify the antiquity of the city. Roman coins have been found in Yeshwanthapura and the present Hindustan Aeronautics Limited area and are testimony to the fact that Bangalore appears to have been an inhabited area from the First Century A.D. The Gangas ruled the Bangalore Area for six centuries till the tenth century A.D. Later, the Bangalore area came under the Cholas. The name “Bengalooru” occurs in a Ninth Century A.D. inscription in the Nageshvara Temple in Begur, a village in the eastern part of present Bangalore area.

Late Shri Magadi Kempegowda I founded the present day Bangalore city in 1537. He was the ruler of Yelahanka, feudatory of the Vijayanagar rulers, and built a mud fort around Bangalore in 1537 A.D. He was a great builder of tanks and temples.

Bangalore was conquered by the Bijapur Sultans around 1637. Bangalore, along with a few other towns in Karnataka, was given as jagir to Shahaji Bhonsle, father of Shivaji. In 1676 Shivaji spent about eight months in Karnataka, from April to December, claiming his share of the paternal jagir from his step-brother, Venkoji and it is very likely Shivaji spent at least a part of that time in Bangalore. After fifty years of Bijapur rule, Bangalore was captured by the Mughals who held it for three years. Bangalore then came under Chikkadevaraja Wodeyar of Mysore (1673-1704) who built a second fort to the south of the one built by Kempegowda I. Remnants of this fort, the Ulsoor Gate, at some distance from the police station bearing the same name only remain.

Kempegowda II (1578-1658) built the four watch-towers, at cardinal points, marking according to folklore, the boundaries of the city. As of today, the city’s boundaries have gone far beyond the watch-towers (Resource Communications (Ed). 1994, p. 13).

The British in the early 19th Century developed eastern portion of the city. The eastern portion of the city was however developed by the British early in the 19th Century.

The history of Bangalore is thus a tale of two cities which coalesced to form the present city.
By 1890, the population of the Cantonment area had crossed the 1,00,000 mark while that of the old city, which also had a prosperous period of trade and commerce, had increased to over 80,000. The cantonment and the civil areas around it were, however, directly administered by the British Government and the city administration was with the State Government of Mysore. It was only in the middle of 1946, the civil areas were ceded to the State and in the year 1949, the city and civil areas of Bangalore were brought under one authority, the Corporation of the city with a population of over 7,00,000.

The most spectacular growth of the city started after independence of the country. The re-organization of states on linguistic basis in 1956 gave further impetus to the growth of Bangalore when it became the capital of a larger state of Mysore with the addition of vast Kannada speaking areas of the former Bombay, Hyderabad, Madras States and Kodagu. Bangalore developed not only as a headquarters of administration and an educational center of Karnataka but also had a tremendous growth as a prominent industrial center in the country. Presently, it is the Silicon Valley of India because of the Information Technology industry.

3.2 GEOGRAPHICAL SETTING

3.2.1 Location of Bangalore

Bangalore is located at the Centre of the South Indian Peninsula (latitude 120 58’ North and longitude 730 36’ East). It is equidistant from both the eastern and the western coasts. It has an elevation of about 931 meters above the mean sea level and it is well known for its equable and salubrious climate.

3.2.2 Topographical Features

Topographically, the city has a smooth ridge running north to south with slopes towards east and west. This results in the rainfall over the ridge area getting divided and flowing east or west. Water flowing down the eastern flank of the ridge ultimately joins south Pinakini, and likewise in the west the water follows the path of Arkavathi. The ‘residency’ area of Bangalore at an elevation of 900 meters above sea level forms one of the highest parts of the plain (maidan) region of Karnataka. Due to this kind of topography, all the waters received through rainfall tend to flow away. Since antiquity,
part of the flow has been seeping into the ground to remain stored in the gaps in the weathered rock formations covered by a thin soil surface and also in the fracture of hard rock at deeper levels.

The predominant type of rock found in this region is a light to dark-gray or whitish biotite granitic gneiss. There is a variation in texture, structure and appearance from place to place with the darker minerals generally arranged with a simple parallel orientation in the rock formations. The thickness of the weathered formation varies from place to place, depending on the topography and formation. Hard rock’s have fractures normally to a depth of 60 meters. (Lingaraju, The Hindu, 15th April 1982, p.4).

A review of the available bore-well data reveals that the zone covering the area parallel to the Chord Road, i.e., Shivanahalli and Vijayanagara has thin soil cover and rugged topography. In addition to this, a series of surface tanks is found from north to south.

The unique topographical features, in the region, have contributed significantly in creating various types of open spaces. Picturesque gardens have been developed by ancient rulers with good justification and foresight. Such open spaces have their landmarks prominent among these is the Kempe Gowda tower built on a granite outcrop of approximately 12m height and situated on the north-easterne part of the park. This archaeological structure built by Kempe Gowda-I was used by him to mark and define the extent of Bangalore’s growth. This hill is acts as a focal point of the park and is a favourite spot for many of the park users.

Bangalore has nearly 50 tanks, both small and large, within or just outside the city which help in collecting the surface drainage. Imporant tanks are Kengeri, Kempambudhi, Sankey, Siddaguntanapalya, Yediyur, Belandur, Byrasandra, Challaghatta, Lalbagh tank. Most of these tanks have originated as irrigational tanks associated with varying degrees of wet cultivation but at present are mainly for ornamental purpose only. In the past, most of these tanks were seasonal getting filled with rainwater only and tended to dry up considerably during the non-monsoon seasons. At present, the enormous quantity of wastewater from the city keeps these tanks perennially full. The contamination with the sewage makes these tanks breeding
ground for *Culex* mosquitoes. It is also to be noted that with the phenomenal increase in population and the development of new suburbs, many tanks which at one time were away from the urban influence, have now become part of the garbage and sewage disposal system. This has greatly added to their mosquito breeding potential and ground water pollution.

Nullahs and Sewage - The major part of the city has an underground sewerage system. There are however many sections which include private layouts and large industrialized areas around but very close to the city which lack an underground sewerage system. In such areas the entire sewage flows into the natural drainage channels which are neither lined nor are properly drained. The main sewers have been laid up to and beyond the urban limits only in three of the six major valleys, namely, Chellaghatta, Koramangala and Vrishabhavati. The other valleys namely, Hebbal, Kathriguppa and Tavarekere (Madivala) valleys are yet to be covered. There are also a few other minor valleys such as the Arkavati Valley in the west which still need main sewer lines. The entire sewage of these valleys get into Kutch nullahs. In the Hebbal Valley, however, a large stone lined box shaped drain has been built near Gangenahally. These open nullahs are highly polluted because most of the slum dwellers and industries are throwing waste into them.

Storm water drains, of varying sizes are found in all parts of the city. Many of them also carry wastewater from domestic as well as public taps. The storm water drains have been designed and built to drain the rush of rainwater and they are not efficient in removing the trickles of wastewater from houses. The gradient in many cases is not enough for smooth flow of water, nor to flush away the debris. The situation is made worse by the indiscriminate dumping of rubbish in to the drains and the natural accumulation of silt. Thus, water stagnates in many of these drains, and is a common roadside sight.

**3.2.3 Climatic Factors**

Bangalore is referred as the ‘air-conditioned’ city of South India and is well known for its equable and salubrious climate. The climate of Bangalore can be described as the tropical monsoon type based on Koppen’s broad climate classification.
The main feature of the climate of Bangalore include a agreeable range of temperature from 33°C in April to 14°C in January, and the two rainy seasons June to September and October to November, coming one after the other but with opposite wind regimes, corresponding to the southwest and northeast monsoons respectively. The is a marked thunderstorm activity with occasional hailstorms and squalls in April – May and September – October. Bangalore records an annual rainfall of 844 mm. A little more than half occurs during the southwest monsoon period and about a quarter in the northeast monsoon period. There is appreciable rainfall from April to May. Two other important features are the predominant low clouding and the more or less steady temperatures with small diurnal variation during the whole monsoon season, June to October, and the early morning dew and mist or fog during the months of October – February.

**Temperature:** December is the coldest month in Bangalore with a mean temperature of 20°C, but January has the lowest daily minimum of 14°C and the mean monthly lowest temperature of 11°C (Mani, A, 1984, p.5). The last week of December and the first week of January are the coldest periods of the year. The highest temperature recorded in 80 years was 38.9°C in May 1931 and the lowest temperature recorded was 7.8°C in January 1884.

The annual range of the monthly mean temperature is only about 7°C. The annual range of the mean daily maximum temperature is 8°C and of the mean daily minimum temperature is 6.5°C. The mean of the extreme annual range of temperature that is, of the difference between the highest and the lowest temperature recorded in a year is about 25°C. This range varies between 22°C and 27°C, in individual years.

It will be seen that the warmest days occur in the last week of April and the coldest in the first or the second week of January. The highest daily maximum temperature occurs in the first two weeks of April, while the highest daily minimum temperature occurs towards the end of April and the beginning of May.

There is a slight rise of temperature from the middle of September to the beginning of October, in the transition period between the Southwest and Northeast monsoon seasons. From the end of October, there is a fairly rapid fall of temperature till the middle of January.
**Humidity:** Bangalore records the highest mean relative humidity of 75 percent occurs during July to October and the lowest mean relative humidity of 46 percent in March. There is a rapid fall in the relative humidity from December to March, the decrease being most rapid between January and February. There is a sharp rise between March and June, the increase being most rapid between May and June. Relative humidity has a fairly large diurnal range. The maximum relative humidity during the day occurs at about 6 a.m. and the minimum at about 3 p.m. The diurnal range is highest, 40 percent from February to April when the air is dry, and lowest from July to October at 24 to 25 percent, when the air is moist. The lowest relative humidity in the year of 28 percent occurs between 3 and 4 p.m. in March and the highest (87 percent) at about 6 a.m. during August to October.

**Rainfall:** Bangalore receives 54 per cent of the total annual rainfall in the Southwest monsoon season (June to September) with a rainfall of 449 mm and 32 rainy days. The rainfall increases from June to September (with the maximum rainfall occurring during September and October), with July and August being the rainiest months. The Southwest monsoon rain commences in the first week of June and closes at the end of September. In April-May, which is a period of summer thunderstorms, the mean rainfall is 145 mm and the number of rainy days is 9. December to March is a comparatively rainless period with a mean rainfall of 33.8 mm and about 3 rainy days.

The major part of the rainfall and a large percentage of heavy falls, especially during April – June and September – October, is associated with thunderstorms. The intensity of rain is greater in April – May and September – October than in the other months of the year and is the greatest in September. The heaviest rainfall of 163 mm in 24 hours occurred on 27th August 1890. This is the highest rainfall recorded in a stretch of 70 years from 1881 up to 1950.

**Winds:** The surface winds over Bangalore have a fairly clear – cut seasonal character. The easterly components predominate in one period and westerly components in the other. During the period May to September, the winds are WSW to W, while during the period November to March they are ENE to ESE. April and October are the transition months when the change over from easterly to the westerly wind region and vice versa takes place.
Occasionally, squalls associated with thunderstorms and rain occurs, mainly in April – May and September – October. The highest wind speed recorded so far is 106 km/h, at about 3.20 p.m. in a squall from the NE on 3rd May 1950. Two other severe squalls occurred on 10th May 1948 and 26th May 1947, when the highest wind speed reached were 102 and 99 km/h respectively.

It is observed in recent times that the climate of Bangalore has changed due to unprecedented urban development. There is a general opinion that Bangalore no more enjoys its salubrious character of garden city. It is necessary to improve the climate of Bangalore by encouraging open spaces and green infrastructure development. Open spaces with vegetation have the potential to act as green wedges mitigating urban heat island effect.

3.3 Population Growth
The population of Bangalore City has grown from 4.13 million in 1991 to 5.101 million in 2001 and 8.426 million in 2011 indicating a steady increase in population.

<table>
<thead>
<tr>
<th>Census</th>
<th>Population</th>
<th>% ±</th>
</tr>
</thead>
<tbody>
<tr>
<td>1941</td>
<td>406,760</td>
<td></td>
</tr>
<tr>
<td>1951</td>
<td>778,977</td>
<td>91.5%</td>
</tr>
<tr>
<td>1961</td>
<td>1,207,000</td>
<td>54.9%</td>
</tr>
<tr>
<td>1971</td>
<td>1,654,000</td>
<td>37.0%</td>
</tr>
<tr>
<td>1981</td>
<td>2,922,000</td>
<td>76.7%</td>
</tr>
<tr>
<td>1991</td>
<td>4,130,000</td>
<td>41.3%</td>
</tr>
<tr>
<td>2001</td>
<td>5,101,000</td>
<td>23.5%</td>
</tr>
<tr>
<td>2011</td>
<td>8,425,970</td>
<td>65.2%</td>
</tr>
</tbody>
</table>

Source: Census of India 2011
The population growth for Bangalore indicates three significant periods:

1. The Colonial Period (1870s to 1940s), with the presences of the British, saw the establishment of the army base, administrative services and colonial area (cantonment area in the city from 1870.

2. Post Independence Period (1940s to 1980s), with the Second World War and National Independence, witnessed industrialisation of the city and the establishment of large Public Sector undertakings of the State (Hindustan Aeronautics Limited, Bharat Electronics Limited, Indian Telephone Industries). During the decade of the 1970s, the phase of the demographic boom, the silk and textile industries flourished.

3. High-tech development period (1980s to 2005), with the liberalisation of the Indian economy in early 1990s, saw the growth of the IT industry.

Although the present 3% annual growth rate for Bangalore is high, it is quite common among many cities around the world. However, after the boom of the 1970s, Bangalore is experiencing a period of demographic stabilisation (as per Volume 1 of RMP 2015).

In the context of this research work it is significant to note that the demand for housing in the gated communities is linked to the development of the IT/ITES industries.

Bangalore, now, has gained all-round importance as an administrative center, trading, and industrial centre along with large IT & BT industries and also as a center of strategic importance due to a concentration of defense establishments. With the establishment of Indian Space Research Organization (ISRO) and several high technology electronics industries, it has become the seat for scientific and technological advancement. Naturally, Bangalore has become the focus of migration of population from rural areas and other centres, both within and outside the state.

The population size, growth rate and distribution have contributed significantly to shaping the environment of the city. The impact of population on environment is primarily through the use of natural resources and production of wastes, all caused by increased economic development and its spread. The major form of environmental stress in the city is loss of biological endowments and their diversity and water and air
pollution and waste generation. The major environmental problems arising from the process of urban development are increasing pollution levels due to discharge of residential wastes, i.e. gaseous, liquid and solid wastes, into the environment and destruction of the fragile urban ecosystem.

3.4 Land use Pattern

Man’s activities which are directly related to the land are generally summarized by the term ‘land use’. Land use can be defined as activity or development which occupies land. It could also be called ‘human use of land’ or ‘human activities on land’ which means that this idea deals as much with people as with land. All non-forest land can be treated as land subject to ‘land use’.

The basic resource in urban planning is land. Primarily, land use must be correlated to the dominant functions which a city must perform. The strategy should be to encourage functions which promote the economic efficiency and, at the same time address the issues related to the management of urban environment in all its aspects. It is necessary to formulate rational and long-term land use planning objectives. The objectives of land use planning may in brief be summarized as: improving physical environment, strengthening urban economy, conserving ecological equilibrium and fostering social values. Broadening our approach from the particular to the general, the following may be stated to be the essential objectives which are also the objectives of ‘Sustainable Development’:

- Establishing a harmonious relationship between areas to be devoted to residential, commercial, industrial, institutional, recreational green and other purposes

- Providing for a planned and orderly development of an urban area for the present and the foreseeable future

- Satisfying diverse needs of the community without provoking conflicts;

- Promoting urban and regional economies

- Helping the inhabitants of the city develop social cohesiveness and a sense of belonging to the community
Minimizing misuse, preventing abuse, regulating disuse and guiding reuse of land.

In the case of Bangalore, land use planning should be with due regard to the following economic roles which the city performs: administration, trade and commerce, housing, industry, center for science and technology as well as for research and higher learning, economic and financial services, provision of social services – including proper waste disposal and the tertiary sectors. Due to insufficient housing facilities many unorganized residential colonies have come up in addition to slums. The density of population is very high in the core area which reduces gradually towards the peripheral areas.

Bangalore is provided with a radial network of roads and major industries are located along these roads. As a result, all along the roads both residential and commercial developments have taken place at a faster rate in a haphazard manner. To have a check on this unplanned growth of the city, an Outline Development Plan (ODP) was prepared and approved by the Government in 1972. Further the ODP was replaced by Comprehensive Development Plan (CDP) approved by the Government in 1984. Before taking up the revision of CDP a detailed land use survey for the Bangalore Local Planning Area (LPA) was carried out in the year 1990. The village settlements and other areas are scattered in the LPA. Spatial expansion of the city produces an impact on the environment by causing loss of agricultural land and increasing the built up area.

**Table 3.2  Land use Distribution in BMA in Master Plan 2015**

<table>
<thead>
<tr>
<th>Area</th>
<th>Area Sq.km</th>
<th>%</th>
<th>Phase 1 2005-2011</th>
<th>Phase 2 2011-2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Urbanized Area</td>
<td>565</td>
<td>43.2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Proposed Area to be urbanized</td>
<td>221</td>
<td>17</td>
<td>162</td>
<td>59</td>
</tr>
<tr>
<td>Inside Peripheral Road</td>
<td>181</td>
<td>132</td>
<td>30</td>
<td>-</td>
</tr>
<tr>
<td>Outside Peripheral Road</td>
<td>40</td>
<td>30</td>
<td>49</td>
<td>-</td>
</tr>
<tr>
<td>Agricultural Land</td>
<td>455</td>
<td>-</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>BMICIPA</td>
<td>65</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>1306</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Volume 1 of RMP 2015
As per the RMP 2015 the BMA comprises of 47 planning districts, categorized into **First Belt** or **Core Area** or **First Ring**, **Second Belt** or **Intermediate Area** or **Second Ring** and **Third Belt** or **Peripheral Area** or **Third Ring Planning Districts.** (Fig 3.1)

3.5 **Zoning of Land use and Regulations**

In order to promote health, safety and the general social welfare of the community, it is necessary to enforce reasonable limitations on the use of land for buildings. This is to ensure that the most appropriate economical and healthy development of the city takes place in accordance with the land use plan. For this purpose, the City is divided into a number of use Zones, such as residential, commercial, industrial, public and semi-public, etc. Each zone has its own regulations as the same set of regulations cannot be applied to the entire city.

Zoning protects residential areas from the harmful invasions of commercial and industrial uses and at the same time promotes the orderly development of industrial and commercial areas. By regulating the spacing of buildings, adequate light, air, protection from fire, etc., can be provided. It prevents overcrowding in buildings and land and thus ensures adequate facilities and services.
Zoning is not retrospective. It does not prohibit the uses of land and buildings that are lawfully established prior to the coming into effect of the zoning regulations. If these uses are contrary to the newly proposed uses, they are termed as non-conforming uses and are gradually eliminated over years without inflicting unreasonable hardship upon the property owner.

The Zoning regulations and their enforcement are a major tool in adhering to the land use pattern of the Master Plan. This has to be closely linked with any plans to translocate city activities.

3.6 Bangalore Today: Its Prominence and Problems

The City of Bangalore is considered as one of the finest cities of India and some comparative studies conducted by Vastu-Shilpa Foundation has revealed that the City ranks very high across the cities in India in several important aspects of better quality of life such as climate, recreation, entertainment, social infrastructure, people’s attitudes, rail and air links, potentiality for growth, career prospects, housing availability and its quality, health, law and order, etc. Bangalore is unusual among Indian cities in the sense that it is a locus for both hi-tech industries and advanced research in science and technology. On account of its strategic location and commercial potentiality, the Government of India has located major industries such as the Indian Telephone Industries, Hindustan Aeronautics Limited, Hindustan Machine Tools, Bharath Electronics, etc., besides setting up research organizations such as Indian Space Research Organization, National Aeronautical Research Laboratory, Aeronautical Development Agency, Electronic and Radar Development Establishment, Gas Turbine Research Institute, Power Research Institute, Raman Research Institute, Indian Institute of Astrophysics, etc. The premier educational institutions of India such as Indian Institute of Science, Indian Institute of Management and National Law School are also located in the City of Bangalore. This happy mix of industry and research is a factor behind its recent emergence as a world-class center for computer software design, and also a magnet for foreign investment. “Some 1658 computer companies, most of them working on overseas software contracts, are located in Bangalore, including a score of multinationals – IBM, Hewlett-Packard and Bell among them. Some have joined forces with Indian hi-tech companies such as Wipro and Tata Information Systems”. Further “more than 300
thousand computer specialists work in Bangalore and the city is the heart of a software export industry that has more than doubled its services in the past two years, topping $6.27 billions” (STPI, Dept. of IT&BT, 2006). The City is globally known as Silicon Valley of Asia apart from being acclaimed as the Garden City of India. In recognition of its growing importance many multinational companies, especially in the field of software development, information technology, biotechnology, etc., have established their corporate offices at Bangalore. Many multinational companies have also been setting up their Asian Offices or Indian Headquarters Offices in Bangalore.

On the other hand, the present population of Bangalore is more than 8 million but it is difficult to predict the size of the city, particularly in view of the huge floating population. The only hopeful sign is that Bangalore’s growth did slow down in the decade 1981-91 as compared with the previous decades, but old Bangaloreans do not see any reason for optimism about their city. In the last twenty years or so it has expanded at a dizzy pace in every direction, and old landmarks have disappeared, coconut groves, vineyards, guava and mango orchards, being cut down to form layouts, Tanks which were essential for maintaining the water table, growing food crops, vegetables and orchards, and attracting bird life, have been drained out for locating bus stations, playgrounds and residential colonies.

The pace of development has been such that municipal services are in danger of breaking down. While the government is making greater and greater efforts to pump water into the city from the Cauvery and other rivers, there is a limit to its ability to maintain supplies to every nook and corner of the fast-growing metropolis. Summer is the time when the resources of the Bangalore Water Supply and Sewerage Board are strained to the utmost, for power breakdowns and voltage fluctuations make the task of pumping water from the reservoirs to all parts of the city most difficult. The Karnataka Electricity Board has become a by-word for inefficiency. Garbage collection is irregular, piles of stinking garbage adorning street corners, being a common sight. Bangalore once used to be referred to as “pensioners’ paradise”, “air-conditioned city”, “garden city” and so on is now a virtual rubble and a civic disaster.

The number of vehicles in Bangalore has increased to more than 1.75 million and Bangalore is reputed to have the largest number of two-wheelers in the country. During peak hours, the city roads are clogged with a bewildering variety of vehicles.
These vehicles are emitting black, poisonous fumes onto the roads. Pollution has increased visibly during the last twenty years, and the recent decision of the police chief to provide masks for all traffic policemen in the city, is a sound, if ominous, one. In fact, it is desirable that all those living in Bangalore wear masks to protect themselves from pollution especially as Bangalore is known to be unfriendly to asthmatics!

Pedestrians are denied even the use of pavements where such exist. Paving pavements with granite slabs is common in Bangalore but it is hazardous to walk on pavements when, thanks to lack of maintenance, slabs jut out at all angles, becoming really stumbling-blocks to the unwary. Builders use pavements for dumping all kinds of building material from sand to jelly stones, and the materials lie there for months but no one seems to bother. Pavements also provide parking space, during working hours, for mobile eateries, cobblers’ stands, cycle-repair shops, coconut sellers, fruit stalls and what have you. In many cases, respective shop keepers encroached upon the pavements to expand their business space. Approximately 165 villages have been absorbed within the Corporation limits of Bangalore and another 218 villages come under the urban agglomeration including the Green Belt (Gowda, K. & Sridhara, M. V. 2000, p. 5).

Another serious problem of Bangalore and perhaps of other fast-growing cities as well, is the rapid shrinkage of lung space. Even areas set apart in the new layouts for schools, playgrounds (civic amenities) etc., are often diverted to other uses with the connivance of officials and politicians. A few stretches of open land still exist in Bangalore but it looks as though there does not seem to be any intention to preserve them as open space. Urban land sharks are eyeing them covetously. Most of the vacant lands have become dumping grounds for wastes, creating environmental problems for the surrounding people.

3.7 Civic Amenities and Community Facilities

Urban planners have been challenged in respect of providing, managing and maintaining community facilities such as community halls, recreational and cultural centers, open spaces, parks, gardens, lakes and green areas for Bangalore’s rapidly
increasing population and phenomenal growth. Community halls and religious centers are used for promotion of art and culture and also for public gatherings.

a. Community Facilities: Community facilities required by the citizens of Bangalore such as recreational facilities, community halls, cultural centers, etc., are distributed and are available in different parts of the city.

b. Recreational Facilities: Bangalore is also called the Garden City of India. It has several parks and open spaces ranging from neighborhood to regional scale. In addition, several roads in almost all parts of the city have avenue trees and plantations. Lalbagh and Cubbon parks are two major city-scale parks which also have facilities for children to play and learn. Palace Grounds which is about 110 hectares is another open space in the city which, if developed, has tremendous potential in providing recreational facilities in the northern part of Bangalore city. The Bangalore Race Course area has a similar potential once the racing activities have been relocated.

While parks and similar open spaces cater largely to the passive recreational needs of the people, Bangalore also has several facilities for the active recreational needs of the population in the form of several stadiums for sports like cricket, football, hockey, tennis, and athletics as well as several neighborhood scale playgrounds.

c. Community Halls: Bangalore has many community halls which are used for the promotion of art and culture and also for public gatherings. The Bangalore Town Hall, Ravindra Kalashetra, Chowdaiah Memorial Hall, Kala Manovilas, Gayana Samaja are city-scale facilities. In addition, there are neighborhood scale corporation community halls.

d. Religious Centers: Bangalore has many religious centers. The more prominent religious centers are the Ramakrishna Ashrama, ISKCON, Satya Sai Centre.

There are vast areas of defense land within Bangalore city. This unclassified area covers 2114.24 hectares or 7.45 percent of the developed area. These defense areas are sparsely developed and act as vital lung spaces in the city. They also act as barriers segregating areas of intense development bordering the large defense areas.
3.8 Emergence of Gated Communities

The recent spurt in Bangalore’s population due to the impact of the IT industry has created a huge demand for housing. In order to capitalize on the situation several private developers have started building gated communities in suburban locations. These gated communities are legally sanctioned as residential group housing developments by the Bangalore Development Authority. A peripheral boundary wall is constructed for reasons of security because of the suburban and relatively remote locations and hence the term gated communities. The BDA sanctioned 96 residential development plans from July 2000 to March 2011. The residential group housing development plans from July 2000 to March 2011 sanctioned by the BDA are given in Annexure 1 Table 7.1 of the Appendix.

These residential group housing schemes sanctioned by the BDA are developed as gated communities by the private developers for buyers mainly from the IT/ITES sectors. The spatial distribution of these gated communities is given in Fig 3.2

![Spatial Distribution of Gated Communities](image)

**Fig. 3.2** Spatial Distribution of Gated Communities (Map drawn by the Author)
As per the Land use zoning regulations 5% of the site area has to be left for development of civic amenities and 10% of the site area has to be left for the development of parks and open spaces. As the gated communities are suburban developments they are remote from existing city scale parks and open spaces. The onus of developing parks and open spaces for residents of the gated communities is with developers. In return the developer has the benefit of being able to sell at a higher per unit rate. The maintenance of the green infrastructure is the responsibility of the residents’ welfare association after occupancy.

Open space is one of the key requirements for the development of green infrastructure. The provision for this has been made in the bye-law itself. This thesis seeks to examine through selected case-studies the development of green infrastructure in the gated communities.